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Date 5/18/03 Serial # 10/062 584 Priority Application Date 2/2/0

Your Name Tuan N. Nguyen Examiner # 79490

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See Claim #: (1 or 12) and 2

(ABSTRACT: Amplifier system pulsed from 10^{-9} to 10^{-3} joule avg. power 1-10watt beam quality $M^2 \leq 2$ a cryogenically-cooled amplify medium, multiple pass

Drawing #: 1, 4, 5, 6

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Searcher: Derrick Blevins	Structure (#)	STN ✓
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Date Completed: 5/23/03	Patent Family	WWW/Internet
Searcher Prep/Rev Time: 245	Other	Other
Online Time: 110		

FILE 'WPIX, JAPIO'
L1 44559 S 1-100
L2 1462148 S LASER OR LUMINANCE OR LUMINESCENCE OR PHOTOLUMINAT? OR ILLUMINAT? OR ILLUME? OR ILLUMINE? OR LIGHT
L3 499352 S AMPLI? OR (EMITTER OR CATHODE)(2N)(FOLLOWER)
L4 259567 S CRYOGENIC? OR (LOW? OR COLD? OR FROZEN OR FREEZ?)(2N)(TEMPERATURE OR TEMP) OR X25-V/MC OR X25-X/IC
L5 6120 S WATT
L6 0 S (BACKUS, STERLING J OR BACKUS STERLING J OR BACKUS, S J OR BACKUS, S J)/AU
L7 2 S (KAPTEYN, HENRY C. OR KAPTEYN HENRY C OR KAPTEYN H C OR KAPTEYN H C)/AU
L8 2 S (MURNANE, MARGARET MARY OR MURNANE MARGARET MARY MURNANE M M OR MURNANE, M M)/AU
L9 1 S (BACKUS, STERLING OR BACKUS STERLING OR BACKUS, S OR BACKUS, S)/AU
L10 2 S (KAPTEYN, HENRY C. OR KAPTEYN HENRY C OR
L11 0 S (KAPTEYN, HENRY OR KAPTEYN HENRY OR KAPTEYN H OR KAPTEYN H)/A
L12 0 S (MURNANE, MARGARET OR MURNANE MARGARET OR MURNANE M OR MURNANE, M)/AU
L13 1995 S L3 AND L4
L14 249 S L13 AND L2
L15 0 S L14 AND L5
L16 18 S L14 AND OSCILLAT?
L17 26 S PUMP(2N)S2
L18 86 S PUMP(5N) S2
L19 3 S L18 AND L4
L20 1898 S L3(4N) MEDIUM
L21 9 S L4 AND L20
L22 9123 S L4(S) L2
L23 113 S L22(S) L3
L24 3685 S LASER AND L4
L25 86 S L24 AND L3
L26 199 S LASER AND CRYOGENIC?
L27 10 S L26 AND L3
L28 10 S L27 NOT L16
L29 12 S (L19 OR L21) NOT (L16 OR L27)
L30 1 S L17 AND L4
L31 86 S (PUMP)(5N)(S2)
L32 2761 S (L4)(4N)(MEDIUM)
L33 2761 S L32 AND L4
L34 112 S L33 AND L2

L35 66 S L25 NOT (L19 OR L21 OR L16 OR L27)
L36 106 S L25 OR L19 OR L21 OR L16 OR L27
SET SMARTSELECT ON
L37 SEL L36 1- PN : 210 TERMS

FILE 'REGISTRY'
L38 79 S (Y AND AL AND O)/ELS AND 3/ELC.SUB
L39 0 S L38 AND ND/CN
L40 0 S L38 AND ND
L41 41131 S NEODYMIUM
L42 0 S L38 AND L41
L43 0 S (Y AND AL AND O AND ND)/ELS AND 3/ELC.SUB
L44 26 S (Y AND AL AND O AND ND)/ELS AND 4/ELC.SUB

FILE 'WPIX, JAPIO'
L45 170 S L3(4N) L4
L46 21 S L45 AND (LASER OR LIGHT?)
L47 15 S L46 NOT L36

L47 ANSWER 1 OF 15 WPIX (C) 2003 THOMSON DERWENT
AN 2002-019151 [03] WPIX
DNN N2002-015270
TI Temperature dependent gain characteristic compensator for optical amplifier, varies gain directly and inversely with respect to temperature in shorter and longer wavelength sides of transmission band respectively.
DC P81 S02 V07
IN EMORI, Y; MIZUNO, K; NAMIKI, S; OHTA, T; SHIRASAKA, Y; TSUDA, T; YODO, S
PA (FURU) FURUKAWA ELECTRIC CO LTD; (EMOR-I) EMORI Y; (MIZU-I) MIZUNO K; (NAMI-I) NAMIKI S; (OHTA-I) OHTA T; (SHIR-I) SHIRASAKA Y; (TSUD-I) TSUDA T; (YODO-I) YODO S
CYC 29
PI EP 1120871 A1 20010801 (200203)* EN 28p
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR
CA 2332091 A1 20010725 (200203) EN
JP 2001210901 A 20010803 (200203) 16p
US 2001036335 A1 20011101 (200203)
ADT EP 1120871 A1 EP 2001-300642 20010125; CA 2332091 A1 CA 2001-2332091 20010124; JP 2001210901 A JP 2000-15483 20000125; US 2001036335 A1 US 2001-770646 20010125
PRAI JP 2000-15483 20000125
AB EP 1120871 A UPAB: 20020114
NOVELTY - The gain in higher temperature is larger than gain in lower temperature region, when the gain is on the shorter wavelength side of a transmission band of optical **amplifier**. The gain in **lower temperature** is larger than gain in higher temperature region, when the gain is on the longer wavelength side of the transmission band.
USE - For compensating the temperature dependent gain characteristics of optical amplifier such as erbium doped optical amplifier (EDFA).
ADVANTAGE - By varying the gain directly or inversely with respect to temperature in shorter and longer wavelength sides of transmission band, the increase in **light** transmission loss due to temperature variation is compensated.
DESCRIPTION OF DRAWING(S) - The figure shows the graph showing the dependency of gain wavelength of gain deviation of L-band at different temperature of EDFA.
Dwg.8/8

L47 ANSWER 2 OF 15 WPIX (C) 2003 THOMSON DERWENT
AN 1997-069990 [07] WPIX
DNN N1997-057780
TI Focus balance adjustment method that adjusts output balance of focus error signal of optical disk - involves adjusting focus balance by applying predetermined value to focus balance switching value that detects abnormality of roll control, when roll control of optical disk occurs beyond normal operating range.
DC T03 W04
PA (MATU) MATSUSHITA DENKI SANGYO KK
CYC 1
PI JP 08315375 A 19961129 (199707)* 8p
ADT JP 08315375 A JP 1995-122634 19950522
PRAI JP 1995-122634 19950522
AB JP 08315375 A UPAB: 19970212
The method involves condensing a **light** beam to the recording and reproduction surface of an optical disk, forming at optical spot in the surface. Reflected **light** from the optical disk is detected by an optical pickup . A reproduction information signal is obtd. from the power output of the optical pick up.

When the roll control of the optical disk occurs out of the normal operating range, the focus balance is adjusted at the max. point of the amplitude of the reproduction information signal, by applying a predetermined value to the focus balance switching value that detects the abnormality of roll control.

ADVANTAGE - Enables focus balance adjustment within limits of stable roll control during **low** or high **temp**., even if max. **amplitude** of reproduction information signal becomes unstable point. Enables adjustment of exact focus balance regardless of ambient temp. change, by extending temp. range. Performs stable focus control. Dwg.1/5

L47 ANSWER 3 OF 15 WPIX (C) 2003 THOMSON DERWENT
AN 1995-059384 [08] WPIX
DNN N1995-047199
TI Measurement of surface temp. of heated bodies - includes splitting of radiation of body into 2 flows of 2 zones of spectrum with calculated widths and registration of powers of flows.
DC S03
IN DUBINOVSKII, A M; KOZIN, V M; OLEINIK, B N
PA (LERE-R) LENGD REFRIG IND TECHN INST
CYC 1
PI SU 1831666 A3 19930730 (199508)* 5p
ADT SU 1831666 A3 SU 1991-4955523 19910628
PRAI SU 1991-4955523 19910628
AB SU 1831666 A UPAB: 19950301
Optical radiation from a heated body (1) is focused by a lens (2) and passes through a **light** dividing plate (3) to a long-wave radiation detector (4) and to a short-wave detector (5). Signals from both detectors (4,5) pass to a summer (6) and the resulting summed signal is passed to a registration instrument (7).

Linearity of the output signal on the measurement temp. is ensured by receiving radiation on the initial section of temp. only by one detector (4) having a practically linear dependency in this section. During further increase of temp. the detector (4) is satd. and its signal no longer changes and, at a temp. of 600-700 deg. K, the spectral sensitivity of the photo-diode is reached and it forms a voltage proportional to the radiation flow.

USE/ADVANTAGE - Measurement of temp. of surfaces of heated bodies. Simultaneous measurement of mean **temp**. and HF **low amplitude** pulses with better sensitivity and accuracy. Bul. 28/30.7.93
Dwg.2/3

L47 ANSWER 4 OF 15 WPIX (C) 2003 THOMSON DERWENT
AN 1993-196396 [24] WPIX
DNN N1993-151048
TI Solid state microwave power **amplifier** module - has substrate of **low temp**. co-fired ceramic material with radial power divider and radially extending transmission lines.
DC U14 U24 W06
IN ALLISON, R C; COX, G A; ALLISON, R
PA (HUGA) HUGHES AIRCRAFT CO
CYC 13
PI US 5218322 A 19930608 (199324)* 11p
EP 565053 A1 19931013 (199341) EN 12p
R: CH DE ES FR GB IT LI SE
AU 9335664 A 19931014 (199348)
CA 2088624 A 19931008 (199401)
JP 06045850 A 19940218 (199412)
AU 654616 B 19941110 (199445)

ADT US 5218322 A US 1992-864980 19920407; EP 565053 A1 EP 1993-105685 19930406; AU 9335664 A AU 1993-35664 19930401; CA 2088624 A CA 1993-2088624 19930330; JP 06045850 A JP 1993-80729 19930407; AU 654616 B AU 1993-35664 19930401
FDT AU 654616 B Previous Publ. AU 9335664
PRAI US 1992-864980 19920407
AB US 5218322 A UPAB: 19931116
The module incorporates a stacked assembly of integrated low temperature co-fired ceramic substrates forming a monolithic structure containing all the microwave circuitry required to combine the output power of a large number of monolithic microwave integrated circuit power amplifier chips, a heat-sink and a power supply.

One substrate defines an input radial power divider circuit for dividing the input signal into input signals for each power amplifier chip. The second substrate includes the power amplifier chips and a radial combiner circuit. The output of the combiner to coupled to an output waveguide in the heat-sink.

USE/ADVANTAGE - Radar array systems. **Lightweight**, small and of high reliability since number of wire bonds is greatly reduced, most of microwave circuitry and connections being capable of forming part of integrated structure.
Dwg.1/8

L47 ANSWER 5 OF 15 WPIX (C) 2003 THOMSON DERWENT
AN 1992-155264 [19] WPIX
DNN N1992-116099 DNC C1992-071475
TI Silica glass mfr. used for **light** directing path - by doping a silica soot boule with aluminium and erbium, and sintering in a fluorine contg. atmos..
DC L01 P81 V07
PA (FUJD) FUJIKURA LTD
CYC 1
PI JP 04092825 A 19920325 (199219)* 5p
JP 3157000 B2 20010416 (200124) 4p
ADT JP 04092825 A JP 1990-210102 19900808; JP 3157000 B2 JP 1990-210102 19900808
FDT JP 3157000 B2 Previous Publ. JP 04092825
PRAI JP 1990-210102 19900808
AB JP 04092825 A UPAB: 19931006
Glass is made by doping Al and Er into a silica soot boule obtd. by vapour phase synthesis, and sintering the boule in a F-contg. atmos. to obtain a silica glass doped with Al, Er and F. **Light** directing path is composed of an internal core body doped with Al, Er and F, an external core body composed of a glass having a higher refractive index than that of the silica glass of the internal core body, and a clad body having a lower refractive index than that of the glass of the external core body.

USE/ADVANTAGE - Used for fibre-type **light amplifiers lowering** sintering **temps**. (1/2)
1/2

L47 ANSWER 6 OF 15 WPIX (C) 2003 THOMSON DERWENT
AN 1991-373742 [51] WPIX
DNN N1991-285922
TI Illumination lamp - has outside **light** sensor for control of lamp output **light** intensity or colour NoAbstract Dwg 1-3/3.
DC P85 Q71 X26
PA (TOSA) TOSHIBA AUDIO VIDEO ENG CO; (TOKE) TOSHIBA LIGHTECH KK
CYC 1
PI JP 03252091 A 19911111 (199151)*
ADT JP 03252091 A JP 1990-50571 19900228
PRAI JP 1990-50571 19900228

AB JP 03252091 A UPAB: 19940831
Oven for heating treated substance in pressure vessel using microwave and for pressurising the substance by high pressure fluid introduced in final stage of a device for generating the microwave is constructed using semiconductor **amplifier** located in **lower temp**
. zone in the vessel.
ADVANTAGE - Since final stage of the **amplifier** is located in **lower temp**. zone superheat of element by the amplifier is avoided, and since the amplifier is exposed to high pressure fluid, the fluid becomes high density, low viscosity and having high fluidity to improve heat dissipation. The oven is suitable to sintering ceramic or treatment of organic substance, e.g. food. @(5pp Dwg.No.5/5)@

L47 ANSWER 7 OF 15 WPIX (C) 2003 THOMSON DERWENT
AN 1991-373740 [51] WPIX
DNN N1991-285920
TI Terminal equipment for **lighting** control system - has photo-coupler between signal output line interface and control circuit NoAbstract Dwg 2/4.
DC W05 X26
PA (TOKE) TOSHIBA LIGHTECH KK
CYC 1
PI JP 03252088 A 19911111 (199151)*
ADT JP 03252088 A JP 1990-47787 19900228
PRAI JP 1990-47787 19900228
AB JP 03252088 A UPAB: 19940831
Oven for heating treated substance in pressure vessel using microwave and for pressurising the substance by high pressure fluid introduced in final stage of a device for generating the microwave is constructed using semiconductor **amplifier** located in **lower temp**
. zone in the vessel.
ADVANTAGE - Since final stage of the **amplifier** is located in **lower temp**. zone superheat of element by the amplifier is avoided, and since the amplifier is exposed to high pressure fluid, the fluid becomes high density, low viscosity and having high fluidity to improve heat dissipation. The oven is suitable to sintering ceramic or treatment of organic substance, e.g. food. @(5pp Dwg.No.5/5)@

L47 ANSWER 8 OF 15 WPIX (C) 2003 THOMSON DERWENT
AN 1991-373739 [51] WPIX
DNN N1991-285919
TI Terminal equipment for **lighting** control system - has control circuit to which signals are input respectively from host and remote control units NoAbstract Dwg 1,2/2.
DC W05 X26
PA (TOKE) TOSHIBA LIGHTECH KK
CYC 1
PI JP 03252086 A 19911111 (199151)*
ADT JP 03252086 A JP 1990-47783 19900228
PRAI JP 1990-47783 19900228
AB JP 03252086 A UPAB: 19940831
Oven for heating treated substance in pressure vessel using microwave and for pressurising the substance by high pressure fluid introduced in final stage of a device for generating the microwave is constructed using semiconductor **amplifier** located in **lower temp**
. zone in the vessel.
ADVANTAGE - Since final stage of the **amplifier** is located in **lower temp**. zone superheat of element by the amplifier is avoided, and since the amplifier is exposed to high pressure fluid, the fluid becomes high density, low viscosity and having high fluidity to improve heat dissipation. The oven is suitable to sintering

ceramic or treatment of organic substance, e.g. food. @(5pp Dwg.No.5/5)@

L47 ANSWER 9 OF 15 WPIX (C) 2003 THOMSON DERWENT
AN 1991-373738 [51] WPIX
DNN N1991-285918
TI Terminal equipment for **lighting** control system - has circuit for determining turn-on or off of lamp loads according to signal from remote switch NoAbstract Dwg 1,2/3.
DC W05 X26
PA (TOKE) TOSHIBA LIGHTECH KK
CYC 1
PI JP 03252085 A 19911111 (199151)*
ADT JP 03252085 A JP 1990-47782 19900228
PRAI JP 1990-47782 19900228
AB JP 03252085 A UPAB: 19940831
Oven for heating treated substance in pressure vessel using microwave and for pressurising the substance by high pressure fluid introduced in final stage of a device for generating the microwave is constructed using semiconductor **amplifier** located in **lower temp**
. zone in the vessel.
ADVANTAGE - Since final stage of the **amplifier** is located in **lower temp**. zone superheat of element by the amplifier is avoided, and since the amplifier is exposed to high pressure fluid, the fluid becomes high density, low viscosity and having high fluidity to improve heat dissipation. The oven is suitable to sintering ceramic or treatment of organic substance, e.g. food. @(5pp Dwg.No.5/5)@

L47 ANSWER 10 OF 15 WPIX (C) 2003 THOMSON DERWENT
AN 1991-373737 [51] WPIX
DNN N1991-285917
TI Terminal equipment for **lighting** control system - has remote level setting switch is connected to fixed resistor connected to variable resistor NoAbstract Dwg 1-3/3.
DC W05 X26
PA (TOKE) TOSHIBA LIGHTECH KK
CYC 1
PI JP 03252084 A 19911111 (199151)*
ADT JP 03252084 A JP 1990-47781 19900228
PRAI JP 1990-47781 19900228
AB JP 03252084 A UPAB: 19940831
Oven for heating treated substance in pressure vessel using microwave and for pressurising the substance by high pressure fluid introduced in final stage of a device for generating the microwave is constructed using semiconductor **amplifier** located in **lower temp**
. zone in the vessel.
ADVANTAGE - Since final stage of the **amplifier** is located in **lower temp**. zone superheat of element by the amplifier is avoided, and since the amplifier is exposed to high pressure fluid, the fluid becomes high density, low viscosity and having high fluidity to improve heat dissipation. The oven is suitable to sintering ceramic or treatment of organic substance, e.g. food. @(5pp Dwg.No.5/5)@

L47 ANSWER 11 OF 15 WPIX (C) 2003 THOMSON DERWENT
AN 1980-E6976C [21] WPIX
TI Low temp. contactless spectral ratio pyrometer - has one switch coupled to measuring circuit and to amplifier and common rail to increase low temp. range.
DC S03
IN KRYSHEV, A P; SEMENISTYI, K S; ZUBOV, V G
PA (AUPH-R) AS UKR PHYS-MECH
CYC 1

PI SU 688836 A 19790930 (198021)*
PRAI SU 1977-2463461 19770318
AB SU 688836 A UPAB: 19930902
Appts. can be used in the metallurgical industry and has a radiation receiver to increase accuracy.
Appts. comprises **light** beam modulator (1), radiation receiver (2), a.c. amplifier (3), capacitor (4), sync. pulse unit (5), transistor switches (6, 7) and measuring circuit (8).
The amplifier averages and amplifies data pulses from the receiver, itself acted on by the modulator affected by the measured object **light**. Depending on pulse polarity, the transistors switch for switch operation. The capacitor stores the voltage amplitudes for later voltage addition without base value. Pulses are held by the functional converter to give a voltage at the pyrometer output, proportional to the pulse ratio logarithm.

L47 ANSWER 12 OF 15 WPIX (C) 2003 THOMSON DERWENT
AN 1975-N2973W [50] WPIX
TI Digital pyrometer for **low temperatures** - has non-inverting DC **amplifier** with high input and output impedances.
DC S03
PA (LEON-I) LEONTEV K L
CYC 1
PI SU 463004 A 19750605 (197550)*
PRAI SU 1972-1765213 19720330
AB SU 463004 A UPAB: 19930831
The invention concerns measurements of the temperature of heated objected and beams of **light** of low intensity. To increase the sensitivity of the measuring device in the region of low temperatures, and to produce a linear response to the changing temperature, the proposed device differs in that the circuit comprises a positive feed-back represented by a non-inverting d.c. amplifier (6) with high impedance at its input and output, and connected in parallel to a capacitor (3). A beam of **light**, after passing through an optical system (1) falls onto a photomultiplier (2). The produced photo-current charges the capacitor (3)and the potential thus created is transmitted to the amplifier (6), the output current of which flows in the same direction as that of the photomultiplier.

L47 ANSWER 13 OF 15 JAPIO COPYRIGHT 2003 JPO
AN 2002-077666 JAPIO
TI IMAGING APPARATUS, DISTANCE MEASURING APPARATUS, IMAGING METHOD AND DISTANCE MEASURING METHOD
IN SUZUKI SATOSHI
PA CANON INC
PI JP 2002077666 A 20020315 Heisei
AI JP 2000-253969 (JP2000253969 Heisei) 20000824
PRAI JP 2000-253969 20000824
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2002
AB PROBLEM TO BE SOLVED: To solve the problems that conventionally, the maximum magnification factor of the gain is decided by the level of the dark current at the highest temperature under the guarantee of a distance measuring apparatus when an output signal is applied a gain, since a gain is also applied to a dark current, even though the dark current is at a level having no effect at normal temperature, there is a risk of using a high multiplication gain and also a risk of occurrence of saturation of output signals at a high temperature.
SOLUTION: An imaging apparatus comprises a signal generating part to generate a signal accompanying an inputted **light**, a transferring part to transfer the generated signal from the signal generating part, a

temperature measuring means to measure the temperature, an amplifying means to amplify the signal transferred from the transferring part and a control means to control the amplification degree of the amplification means at a first temperature to become smaller than that of the **amplification** means at a second **temperature** which is **lower** than the first temperature corresponding to a measurement by the temperature measuring means.
COPYRIGHT: (C)2002,JPO

L47 ANSWER 14 OF 15 JAPIO COPYRIGHT 2003 JPO
AN 1998-065203 JAPIO
TI MANUFACTURE OF SEMICONDUCTOR PHOTODETECTOR
IN NAKAMURA TAKESHI; KYOZUKA SHINYA; YAMADA TAKAYUKI; MIYAMOTO YASUMASA
PA FUJI XEROX CO LTD
PI JP 10065203 A 19980306 Heisei
AI JP 1996-219677 (JP08219677 Heisei) 19960821
PRAI JP 1996-219677 19960821
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1998
AB PROBLEM TO BE SOLVED: To crystallize an **amplification** layer through a simple, **low-temperature** process, without making a manufacturing process complicated in the manufacture of a semiconductor photodetector provided with an amplification layer composed of a well layer and a barrier layer for inducing an avalanche multiplication.
SOLUTION: A lower electrode 2, an amplifying layer 3 which is composed of a well layer 4 (poly-Si) and a barrier layer 5 (SiC) and is continuously varied in a band gap to a **light**-absorbing layer 6 by the control of C content. The **light**-absorbing layer 6, and an upper electrode 7 are successively laminated on an insulating board 1 for the formation of a semiconductor photodetector. In this case, the barrier layer 5 and the well layer 4 comprising the amplifying layer 3 are turned polycrystalline by irradiating with an ion beam of high energy.
COPYRIGHT: (C)1998,JPO

L47 ANSWER 15 OF 15 JAPIO COPYRIGHT 2003 JPO
AN 1992-287560 JAPIO
TI ELECTRONIC BLACKBOARD DEVICE
IN MARUYAMA ICHIRO; NAKAYAMA TAKESHI
PA MATSUSHITA ELECTRIC IND CO LTD
PI JP 04287560 A 19921013 Heisei
AI JP 1991-51920 (JP03051920 Heisei) 19910318
PRAI JP 1991-51920 19910318
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1992
AB PURPOSE: To attain stable print recording even when a luminous quantity of a **light** source is deteriorated at a low temperature by providing a temperature dependency resistor to an amplifier circuit of an electric signal from a CCD image sensor.
CONSTITUTION: A a temperature dependency resistor 17 whose resistance R3 is decreased as **temperature** is **lower** is provided to an **amplifier** section 12 of a processing circuit section processing an electric signal from a CCD image sensor and outputting the result. When the temperature of a fluorescent **light** is decreased and the luminous quantity is decreased, the resistance R3 of the resistor 17 is decreased, the gain of the amplifier section 12 is increased and a stable data is outputted to a binarizing section. Thus, stable print recording is attained even to the reduction in the luminous quantity caused by the temperature decrease in the fluorescent **light**.
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L16 ANSWER 1 OF 18 WPIX (C) 2003 THOMSON DERWENT
AN 2002-409814 [44] WPIX
DNN N2002-322094 DNC C2002-115778
TI Dye-**laser** apparatus, includes pigment solution flow cell made of material whose heat conductivity is higher than quarter glass and has **low temperature** coefficient.
DC L03 V08
PA (LASE-N) LASER NOSHUKU GIJUTSU KENKYU KUMIAI; (TOSN) TOSHIBA DENSHI ENG KK; (TOKE) TOSHIBA KK
CYC 1
PI JP 2002050817 A 20020215 (200244)* 5p
ADT JP 2002050817 A JP 2000-233131 20000801
PRAI JP 2000-233131 20000801
AB JP2002050817 A UPAB: 20020711
NOVELTY - The apparatus includes a pigment solution flow cell (18) made of a material whose heat conductivity is higher than quartz glass. The cell has a **low temperature** coefficient which is the refractor index change with respect to temperature change. A die **laser** beam is **oscillated** and supplied to the cell.
USE - Dye-**laser** apparatus with pigment flow cell for guiding pigment solution.
ADVANTAGE - Wave-front distortion of output **laser** beam by heat generation in flow cell is reduced, hence transmission efficiency of **laser** beam is improved.
DESCRIPTION OF DRAWING(S) - The figure shows a schematic view of a dye-**laser oscillator** and dye-**laser amplifier**.
Flow cell 18
Dwg.2/3

L16 ANSWER 2 OF 18 WPIX (C) 2003 THOMSON DERWENT
AN 1998-469420 [41] WPIX
DNN N1998-365930
TI Scanning near-field optical microscope for observing locally excited emission of **light** from semiconductor device - comprises optical waveguide probe held to quartz **oscillator** by spring pressure of resilient body.
DC P81 S02 U11 V07
IN TOMITA, E
PA (DASE) SEIKO INSTR INC; (DASE) SEIKO DENSHI KK
CYC 29
PI EP 864899 A2 19980916 (199841)* EN 15p
R: AL AT BE CH DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI
JP 10253643 A 19980925 (199849) 12p
CA 2229221 A 19980912 (199905)
KR 98080196 A 19981125 (200004)
TW 376448 A 19991211 (200043)
US 6194711 B1 20010227 (200114)
JP 3249419 B2 20020121 (200207) 10p
ADT EP 864899 A2 EP 1998-301808 19980311; JP 10253643 A JP 1997-58013 19970312; CA 2229221 A CA 1998-2229221 19980311; KR 98080196 A KR 1998-8370 19980312; TW 376448 A TW 1998-103580 19980311; US 6194711 B1 US 1998-38259 19980310; JP 3249419 B2 JP 1997-58013 19970312
FDT JP 3249419 B2 Previous Publ. JP 10253643
PRAI JP 1997-58013 19970312
AB EP 864899 A UPAB: 19981217
The microscope has an optical waveguide probe (1) provided with a microscopic aperture portion of a diameter less than a wavelength at its tip. A vibration application portion consists of a piezoelectric vibrating

body (2) and an alternating current voltage-generating portion (3). A vibration-detecting device consists of a quartz **oscillator** (4) and a current/voltage **amplifier** circuit (5). A coarse displacement device (6) brings the optical waveguide probe close to a surface of a sample. An optical detection device consists of lenses (7, 8) and a photodetector (9).

A sample-to-probe distance control device consists of a Z motion fine adjustment device (11) and a Z servo circuit (12). A two-dimensional scanning device consists of an XY fine motion device (13) and an XY scanning circuit (14). A data processing device (15) converts a measurement signal into a three-dimensional image. The optical waveguide probe is preferably held to the quartz **oscillator** by spring pressure of a resilient body (16).

ADVANTAGE - Has high resolution less than wavelength at **low temperatures** and is capable of measurement of locally excited **light** emission.

Dwg.1/15

L16 ANSWER 3 OF 18 WPIX (C) 2003 THOMSON DERWENT
AN 1993-246385 [31] WPIX
DNN N1993-189709
TI **Light amplifier** injecting excitation and signal **light** in optical fibre - holds Q-value of **light amplifier** at low value over wide temp. range preventing **oscillation** due to returned **light** NoAbstract.
DC P81 V07
PA (FUIT) FUJITSU LTD
CYC 1
PI JP 05167144 A 19930702 (199331)* 5p
JP 3175246 B2 20010611 (200135) 5p
ADT JP 05167144 A JP 1991-327687 19911211; JP 3175246 B2 JP 1991-327687 19911211
FDT JP 3175246 B2 Previous Publ. JP 05167144
PRAI JP 1991-327687 19911211

L16 ANSWER 4 OF 18 WPIX (C) 2003 THOMSON DERWENT
AN 1993-087018 [11] WPIX
CR 1998-112497 [11]
DNN N1993-066567 DNC C1993-038340
TI Electroacoustic hybrid integrated circuit - has active element bonded directly to the electroacoustic element using silicon compound films for higher integration and small size.
DC L03 U13 U14 U23 U24 V06
IN EDA, K; KANABOSHI, A; OGURA, T; TAGUCHI, Y
PA (MATU) MATSUSHITA ELEC IND CO LTD; (MATU) MATSUSHITA ELECTRIC IND CO LTD; (MATU) MATSUSHITA DENKI SANGYO KK
CYC 4
PI EP 531985 A1 19930317 (199311)* EN 24p
R: DE FR GB
JP 05075345 A 19930326 (199317) 5p
JP 06029741 A 19940204 (199410) 4p
JP 06283927 A 19941007 (199445) 5p
EP 531985 B1 19990224 (199912) EN
R: DE FR GB
DE 69228458 E 19990401 (199919)
EP 823780 B8 20020904 (200266) EN
R: DE FR GB
ADT EP 531985 A1 EP 1992-115465 19920910; JP 05075345 A JP 1991-232841 19910912; JP 06029741 A JP 1992-46907 19920304; JP 06283927 A JP 1992-23488 19920210; EP 531985 B1 EP 1992-115465 19920910, Related to EP 1997-117914 19920910; DE 69228458 E DE 1992-628458 19920910, EP

1992-115465 19920910; EP 823780 B8 Div ex EP 1992-115465 19920910, EP 1997-117914 19920910
FDT EP 531985 B1 Related to EP 823780; DE 69228458 E Based on EP 531985; EP 823780 B8 Div ex EP 531985
PRAI JP 1992-46907 19920304; JP 1991-232841 19910912; JP 1992-23488 19920210
AB EP 531985 A UPAB: 20021014
Electro acoustic hybrid integrated circuit comprises semiconductor substrate, active element, single crystal piezoelectric substrate bonded to the semiconductor substrate via a film including silicon. The surface acoustic wave element comprising the piezoelectric substrate is connected to the active element to form an electro-acoustic circuit.

Mfr. of device comprises forming the active element on the substrate surface at a temp. higher than the heat treatment temp. for direct bonding, forming a film including Si on at least either of the semiconductor or piezoelectric substrates, bonding the substrates via the film and performing processes for forming the active element and the metallisation at a processing **temp**. **lower** than the heat treatment of the direct bonding and processes for forming a surface acoustic wave element on the piezoelectric substrate. The active element and surface acoustic element are integrated as one body.

Substrate is Si, GaAs (III)-(V) compound semiconductor. The active element includes a transistor. The piezoelectric substrate is lithium niobate, or quartz. The film is crystalline silicon, amorphous silicon, or silicon oxide. The electroacoustic circuit is a voltage controlled **oscillator**, a temp. compensated crystal **oscillator** or a high frequency **amplifier**.

ADVANTAGE - The devices are small, **light** and have good productivity.
Dwg.5/16

L16 ANSWER 5 OF 18 WPIX (C) 2003 THOMSON DERWENT
AN 1990-239200 [31] WPIX
DNN N1990-185487
TI Continuous **laser amplification** produced by purely chemical process - uses exothermic reaction as energy source for **amplification** of **light** in visible and ultraviolet spectral ranges.
DC V08
IN COBB, S H; WOODWARD, R J
PA (GEOR-N) GEORGIA TECH RES CORP; (GEOR-N) GEORGIA TECH RES; (GEOR-N) GEORGIA TECH RES CO
CYC 18
PI WO 9007810 A 19900712 (199031)*
RW: AT BE CH DE DK ES FR GB IT LU NL SE
W: AU CA JP SU
US 4945546 A 19900731 (199033)
AU 9049455 A 19900801 (199042)
EP 452400 A 19911023 (199143)
R: DE FR GB
US 5093836 A 19920303 (199212) 10p
JP 04502685 W 19920514 (199226) 12p
EP 452400 A4 19920923 (199523)
ADT US 4945546 A US 1989-293322 19890104; EP 452400 A EP 1990-902040 19900103; US 5093836 A US 1989-375042 19890703; JP 04502685 W JP 1990-502131 19900103, WO 1990-US80 19900103; EP 452400 A4 EP 1990-902040
FDT JP 04502685 W Based on WO 9007810
PRAI US 1989-293322 19890104; US 1989-375042 19890703
AB WO 9007810 A UPAB: 19930928
Laser amplification and **oscillation** is produced in the appts., which consists of an oven (10) and reaction

chamber (12). Selected metal trimers are mme produced using a supersonic beam source (15) that includes an oven (16) and a supersonic nozzle (18). A beam of metal vapour (20) is directed at the reaction zone (24) through an orifice (13) in the liquid nitrogen baffle (22). Halogen is supplied to the graphite tube furnace (26) via a manually-operated valve ((30), adjusted to produce the required output of halogen atoms to the reaction zone. Lasing occurs when the metal vapour impinges on the halogen atoms.

USE/ADVANTAGE - Can be transformed to multiple pass **oscillatory** system. Produces high gain. Operates at relatively **low temps**.

1/6

L16 ANSWER 6 OF 18 WPIX (C) 2003 THOMSON DERWENT
AN 1984-172316 [28] WPIX
DNN N1984-128454
TI Fire detector using optical fibre heat sensor - passes modulated **light** through fibre for photoelectric element to check attenuation which increases with heat damage.
DC S03 W05
IN OKAZAKI, T
PA (NOHM) NOHMI BOSAI KOGYO CO LTD
CYC 8
PI EP 113046 A 19840711 (198428)* EN 8p
R: BE CH DE FR GB IT LI
ES 8501552 A 19850216 (198521)
DE 3373736 G 19871022 (198743)
DE 3373736 A 19871022 (198745)
ADT EP 113046 A EP 1983-111869 19831126
PRAI JP 1982-182610U 19821203
AB EP 113046 A UPAB: 19930925
The detector uses a fibre (1) with plastic core and clad layers with different refraction rates and which fuse at a **low temp** . An LED (2) at one end of the fibre has a **light** emitting current feed circuit (3) to modulate its output using an **oscillator** (5) with a frequency f. The modulated output is passed over the fibre for a photoelectric element (6) of a solar cell to receive at the other end.

An **amplifier** (7) **amplifies** the cell output for a filter (8) to pass only the output modulated by a specific frequency (f).

A fire discriminating circuit (9) has a comparator which emits a fire signal when the output through the bandpass filter has fallen below a predetermined level. This occurs if the fibre is damaged by fire.

1/1

L16 ANSWER 7 OF 18 JAPIO COPYRIGHT 2003 JPO
AN 2001-007437 JAPIO
TI FREQUENCY STABILIZED **LIGHT** SOURCE
IN HIRATA TAKAAKI; TACHIKAWA YOSHIHIKO; IIO SHINJI; SUEHIRO MASAYUKI
PA YOKOGAWA ELECTRIC CORP
PI JP 2001007437 A 20010112 Heisei
AI JP 1999-170919 (JP11170919 Heisei) 19990617
PRAI JP 1999-170919 19990617
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2001
AB PROBLEM TO BE SOLVED: To realize a frequency stabilized **light** source in which the optical output is stabilized for a long term by an arrangement wherein a feedback loop for controlling the **oscillation** frequency of a semiconductor **laser** feeds back to the working **temperature** in a **low** frequency loop and feeds back to the working current in a high frequency loop. SOLUTION: An **oscillation** frequency difference signal is delivered from a lock-in **amplifier** 6 to a low-pass filter 11 and

a low frequency component fetched out therefrom is used by a control circuit 7a and a temperature regulator 10 for controlling the working temperature of an LD 1. An **oscillation** frequency difference signal is delivered from the lock-in **amplifier** 6 to a high-pass filter 12 and a high frequency component fetched out therefrom is used by a control circuit 7b and an LD drive circuit 8 for controlling the working current of the LD 1. Since the working current is fed back through a high frequency loop and no DC component is contained, the working current is kept constant for a long term and optical output from the LD is not fluctuated.

L16 ANSWER 8 OF 18 JAPIO COPYRIGHT 2003 JPO
AN 1998-051055 JAPIO
TI **LASER OSCILLATION** EQUIPMENT
IN EGUCHI SATOSHI; HAYASHIGAWA HIROYUKI; YAMASHITA TAKAYUKI
PA MATSUSHITA ELECTRIC IND CO LTD
PI JP 10051055 A 19980220 Heisei
AI JP 1996-198709 (JP08198709 Heisei) 19960729
PRAI JP 1996-198709 19960729
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1998
AB PROBLEM TO BE SOLVED: To reduce thermal inertia left in a **laser** absorber, and prevent damage of a hose for circulation, by installing a temperature sensor on the surface of a circulation hose junction on the refrigerant inlet side of the **laser** absorber, and controlling the temperature of the **laser** absorber.
SOLUTION: A **laser** beam 5 outputted from a mirror 2 for optical **amplification** is radiated to the outside or cut off by the make and break operation of a **laser** absorbing body 6. Refrigerant circulates in the absorber 6 through a circulation hose and a circulation hose junction, and cools the absorber. A temperature sensor is installed on the surface of the circulation hose junction on the inlet side of the refrigerant. The detected temperature of the temperature sensor is equal to a **low temperature** which is nearly equal to that of the refrigerant cooled by a cooler. When the temperature sensor operates and the **laser** beam is interrupted, the temperature of the **laser** absorber 6 rises, but thermal inertia left in the **laser** absorber 6 is restrained to be low, so that the rising **temperature** is set **lower** than or equal to the deterioration temperature of the circulation hose.

L16 ANSWER 9 OF 18 JAPIO COPYRIGHT 2003 JPO
AN 1995-006893 JAPIO
TI LIGHTING SYSTEM BY USING INVERTER
IN SUZUKI HARUMI
PA SUZUKI HARUMI
PI JP 07006893 A 19950110 Heisei
AI JP 1993-344501 (JP05344501 Heisei) 19931220
PRAI JP 1993-96485 19930401
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1995
AB PURPOSE: To automatically dim **light** to necessary brightness according to an ambient temperature or illuminance or both of these by an inverter formed of a temperature sensor, an illuminance sensor and the like.
CONSTITUTION: An **oscillating** circuit is formed of a transformer TR1, a transistor Q1, a resistor R1, a thermistor, capacitors C1 and C2 and a magnetic capacitor as a temperature sensor whose capacity is reduced at **low temperature** time. The **oscillating** frequency changes according to a temperature change, and **amplitude** is in inverse proportion to a frequency, and output emits **light**

from a discharge tube LMP through a capacitor C3. Since the ceramic capacitor whose capacitance is increased at **low temperature** time is used as the capacitor C3, an electric current to the discharge tube LMP changes to a temperature change, and brightness also changes, so that **light** dimming by a temperature becomes possible. Since an element whose resistance changes according to illuminance is used as the resistor R1, the **light** dimming becomes possible simultaneously according to changes in both of temperature and illuminance.

L16 ANSWER 10 OF 18 JAPIO COPYRIGHT 2003 JPO
AN 1993-267754 JAPIO
TI **LASER** BEAM **OSCILLATION** DEVICE
IN SUZUKI TAKESHI; MUKAI MIKIO
PA SONY CORP
PI JP 05267754 A 19931015 Heisei
AI JP 1992-91936 (JP04091936 Heisei) 19920317
PRAI JP 1992-91936 19920317
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1993
AB PURPOSE: To obtain a **laser** beam **oscillation** device capable obtaining a **laser** beam of high output energy by a method wherein the reflecting mirror on at least one side of reflecting mirrors has a reflection layer constituted of a superconductive substance.
CONSTITUTION: In a state that reflection layers 7a and 7b of respective reflecting mirrors are cooled by a cooling device 10 at a **temperature** or **lower**, at which the layers 7a and 7b are brought into a superconductive state, a xenon discharge tube 3 is discharged to generate strong discharge **light**, whereby ions in a ruby 2 are pumped from a ground state to a wide absorption band. **Light**, which is induction-emitted, repeats a reflection between the reflecting mirrors 21a and 21b, which respectively have the layers 7a and 7b constituted of a superconductive substance, and the **light** is **amplified** in a resonance state. The intensity of the **light** reaches the critical magnetic field of the superconductive substance constituting the layer 7b and when the superconductive state is destructed, the **light** passes through the mirror 21b and a high-output **laser** beam is emitted to the outside through the mirror 21b. Accordingly, it becomes possible to obtain a **laser** beam of high energy.

L16 ANSWER 11 OF 18 JAPIO COPYRIGHT 2003 JPO
AN 1989-305228 JAPIO
TI COOKING APPARATUS
IN ODA MAKOTO; ISHIHARA MASAHIRO; SHINOZAKI TOSHIYA; OKAWA SHUJI
PA HITACHI HEATING APPLIANCE CO LTD
PI JP 01305228 A 19891208 Heisei
AI JP 1988-135826 (JP63135826 Showa) 19880602
PRAI JP 1988-135826 19880602
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1989
AB PURPOSE: To improve the accuracy of control of a cooking apparatus which can apply the scorching by turning the foodstuff and receiving the reflected visible rays outside the heating chamber through an opening disposed in the heating chamber sidewall and controlling the respective thermal energy generating means thereby.
CONSTITUTION: **Light** is radiated to the foodstuff 3 from a **light** source 15 as it is turned on a turn table 2. The visible rays 28 reflected from the foodstuff 3 are received by a heat resistant optical guide 18 through a **light** receiving opening 17 and are transmitted to via an optical fiber 19 and detected by a **light**

receiving element 20 disposed in the **low temperature** section. The detected optical output is supplied to a microcomputer 23 through an **amplifier** 21 and an A/D converter 22 to make a determination as to the degree of scorching. Based on such determination, the high frequency **oscillator** 11 and electric heaters 8, 8A are controlled by means of a control device 27. This constitution allows the **light** receiving section to be installed in the **low temperature** section and protected from contamination such as drifting smoke, and so, the control accuracy can be improved.

L16 ANSWER 12 OF 18 JAPIO COPYRIGHT 2003 JPO
AN 1988-058024 JAPIO
TI ELECTRONIC OVEN
IN KAKUMA HIDEMITSU; NAKAMOTO MASAYUKI; HIRAO YOSUKE
PA TOSHIBA CORP
PI JP 63058024 A 19880312 Showa
AI JP 1986-198913 (JP61198913 Showa) 19860827
PRAI JP 1986-198913 19860827
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1988
AB PURPOSE: To improve the reliability of an user on the electronic oven and to prevent the lowering of an output of an infrared ray detector by providing an infrared ray detector for detecting infrared rays passing through an infrared ray passing hole, radiated from a material to be heated, and a control circuit for controlling a high-frequency **oscillator** by an output from the infrared ray detector.
CONSTITUTION: An infrared ray passing hole 5 is provided on the upper wall surface of a heating chamber 1, and a visional field limiting horn 7 is provided in the infrared ray passing hole 5. One end of an optical fiber 8 for infrared rays is connected to the visional field limiting horn 7. An infrared ray detector 10 is installed at the lower part outward of the heating chamber 1, and another end of the optical fiber 8 for infrared rays is coupled to the **light** receiving surface of the infrared ray detector 10. A control circuit for controlling a high frequency wave **oscillator** is constituted such that when the output of the infrared ray detector 10 is **amplified** by a pre-**amplifier** 20 and is compared with a preset temperature of a material to be heated by means of a comparator 21 and reaches the preset temperature, them a final stage **amplifier** 23 for imparting a stop signal to a high-tension lead switch 22 operates. Since the infrared ray detector 10 is provided at the lower part outside the heating chamber 1, the temperature rise is greatly **lowered** and a **temperature** difference between the material to be heated and the infrared detector increases. Therefore, the output of the detector is improved.

L16 ANSWER 13 OF 18 JAPIO COPYRIGHT 2003 JPO
AN 1987-266885 JAPIO
TI GAS **LASER** APPARATUS
IN TAKEBE SHIN; MATSUNO KIYOO; NOTOMI RYOICHI; ARIGA TATSUYA
PA KOMATSU LTD
PI JP 62266885 A 19871119 Showa
AI JP 1986-111359 (JP61111359 Showa) 19860515
PRAI JP 1986-111359 19860515
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1987
AB PURPOSE: To make it possible to **oscillate** high power output **laser** as a whole, by providing a gas cooling radiator between two or more sets of discharge electrode pairs, always cooling **laser** gas, which is sent to a space between discharge electrodes located on the downstream side, and preventing the decrease in **amplification** action of **light**.

CONSTITUTION: A **laser**-gas cooling radiator 11 is provided between two sets of discharge-electrode pairs 3-1 and 3-2 and 3'-1 and 3'-2 so as to cross the flowing direction of gas. **Laser** gas is made to flow in the direction of an arrow 6 in an airtight container 1. At first, the gas is cooled by a heat exchanger 4. The **laser** gas, whose **temperature** is made **low**, flows into a discharge space 7-1, which is formed by the electrode pair 3-1 and 3-2 on the upstream side of the gas. The gas is excited, and **laser** **light** is **oscillated** and generated. The gas, which has passed the discharge sapce 7-1, and whose temperature becomes high, is sent into a discharge space 7-2, which is formed by the electrode pair 3'-1 and 3'-2 on the downstream side. The **laser** gas is cooled through the radiator 11, and the **temperature** is **lowered** . Therefore, the **amplification** action of the **laser** **light** is not so decreased, and effective **oscillation** is performed.
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L16 ANSWER 14 OF 18 JAPIO COPYRIGHT 2003 JPO
AN 1987-257776 JAPIO
TI RUBIDIUM ATOMIC **OSCILLATOR**
IN ISHIHARA NAOKI
PA NEC CORP
PI JP 62257776 A 19871110 Showa
AI JP 1986-100329 (JP61100329 Showa) 19860430
PRAI JP 1986-100329 19860430
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1987
AB PURPOSE: To obtain a small-sized microwave **oscillator** having small power consumption by mounting a semiconductor **light** -emitting element and an emission-voltage controller for the element.
CONSTITUTION: A semiconductor **light**-emitting element 1 having wide spectral band width at the center of a wavelength of 7800Å is used, and spectra required for opcital pumping are acquired through a filter 3 without exerting an effect on the fluctuation of the central spectrum of emission. The beams pass through a gas cell 5 in a resonant cavity 4, beams having 7800Å are absorbed, and beams reach a solar cell 7. An output from the solar cell is **amplified** 20, and the **oscillation** frequency of microwaves is stabilized while the output is utilized, and an emission-voltage controller 10 stabilizes the emission intensity of the **light**-emitting element 1. An emitter is formed in a solid-state element, thus miniaturizing the title **oscillator** , then allowing operation at a **low temperature**.
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L16 ANSWER 15 OF 18 JAPIO COPYRIGHT 2003 JPO
AN 1987-228482 JAPIO
TI **LOW-TEMPERATURE** PLASMA TREATING DEVICE
IN SUZUKI KAZUO; CHIBA ATSUSHI; SONOBE TADASHI
PA HITACHI LTD
HITACHI SERVICE ENG CO LTD
PI JP 62228482 A 19871007 Showa
AI JP 1986-51188 (JP61051188 Showa) 19860308
PRAI JP 1986-51188 19860308
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1987
AB PURPOSE: To carry out **low-temp**. plasma treatment with reproducibility by providing a means for monitoring the electric discharge conditions during the treating time and controlling the discharge conditions of plasma or a gaseous reactant in a fixed state, and uniformizing the thickness and quality of a film and the surface treatment.
CONSTITUTION: A control means consisting of optical sensors 21 and 22

provided with a filter, a divider 23, and a differential **amplifier** 25 is provided in a sample chamber 11a. Two kinds of emitted **light** spectra 20a and 20b in the vicinity of a sample 15 are received by the filter-provided optical sensors 21 and 22, the sensitivity is regulated, the values are inputted to the divider 23, and the ratio of both spectra 20a and 20b is obtained. The ratio is transmitted to the differential **amplifier** 25, and the difference from the set value 24 is detected. The difference is fed back to the current controllers 19a and 19 of the first and the second electric power source 18a and 18 for supplying an electric current to a magnetic field coil 4 or a microwave **oscillator** 17. Consequently, the discharge conditions of plasma 7 or a gaseous reactant 13 during treatment can be controlled in a fixed state.

L16 ANSWER 16 OF 18 JAPIO COPYRIGHT 2003 JPO
AN 1984-048626 JAPIO
TI VIBRATION TESTING OF REFRIGERATOR FOR OPTICAL EQUIPMENT
IN FUKUDA HIROKAZU; SHINOHARA KOUJI; NISHIJIMA YOSHITO; YAMAMOTO KOSAKU
PA FUJITSU LTD
PI JP 59048626 A 19840319 Showa
AI JP 1982-159078 (JP57159078 Showa) 19820913
PRAI JP 1982-159078 19820913
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1984
AB PURPOSE: To enable a highly accurate measurement of vibration **amplitude** by projecting incident **light** from a visible **light** source on a screen through a lens while a refrigerator is in operation after the visible **light** source is placed on a cooling base at the tip of a cooling head.
CONSTITUTION: An He gas circulation type refrigerator 1 comprising a piston driving section 2 and a cooling head 3 to be cooled at a **low temperature** connected thereto 2 is arranged on a vibration proof surface board not illustrated. A visible **light** source 6 comprising a visible **light** emitting diode (LED), a **laser** diode (LD) for **oscillating** a visible **light** or the like is placed on a cooling base 5 at the tip of the cooling head 3. An incident **light** 7 from the visible **light** source 6 is projected on a screen 9 arranged facing it at a specified space through a lens 8. This enable a highly accurate measurement of the **amplitude** of vibration.

L16 ANSWER 17 OF 18 JAPIO COPYRIGHT 2003 JPO
AN 1983-052890 JAPIO
TI AUTOMATIC FREQUENCY CONTROL **LIGHT AMPLIFIER**
IN YAMAMOTO YOSHIHISA; MUKAI TAKAAKI
PA NIPPON TELEGR & TELEPH CORP <NTT>
PI JP 58052890 A 19830329 Showa
AI JP 1981-150582 (JP56150582 Showa) 19810925
PRAI JP 1981-150582 19810925
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1983
AB PURPOSE: To realize a linear **amplifier**, in which Fabry-Perot resonance mode frequency automatically follows incident signal optical frequency, and an injection synchronous **amplifier**, in which **oscillation** frequency automatically follows incident signal optical frequency, by automatically tuning the **oscillation** frequency and resonance mode frequency of the **light amplifier** to incident signal optical frequency.
CONSTITUTION: A **light amplifier** has a half mirror 4 for branching incident signal beams, a half mirror 5 for branching output signal beams, the **light amplifier** 6, a wave plate 7

giving the phase shift of π/2, the wave synthesizer 8 of two optical signals and a photodetector 9. One part of the incident signal beams and one part of output signal beams are extracted by means of the half mirrors, the phase of the output signal beams is advanced only by π/2, and two optical signals are synthesized. When currents injected are increased, carrier density increases and the resonance mode frequency is shifted to the high frequency side in the linear **amplifier** operating at **oscillation** threshold or **lower**, and the **temperature** of an active layer elevates and the **oscillation** frequency is shifted to the low frequecy side in the injection synchronous **amplifier** operating at **oscillation** threshold value or higher. N-P-N junction sections 10, 11, 12, 13 from a photo transistor, error optical signals are detected by the P-N junction of 12-13, and photocurrents **amplified** flow through the active layer 11.

L16 ANSWER 18 OF 18 JAPIO COPYRIGHT 2003 JPO
AN 1979-065579 JAPIO
TI ALARM ELECTRONIC WATCH
IN HIRAYAMA YOSHIHIKO
PA SEIKO INSTR & ELECTRONICS LTD
PI JP 54065579 A 19790526 Showa
AI JP 1977-131924 (JP52131924 Showa) 19771102
PRAI JP 1977-131924 19771102
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1979
AB PURPOSE: To obtain alarm sounds which are always attractive and have a wide variety by continuously changing one or more out of the frequency, intermittent frequency and sound volume of the alarm sounds depending upon the changes in ambient temperature or brightness.
CONSTITUTION: An astable multivibrator using a thermistor 1 for temperature detection as a constant at the **oscillation** and CdS2 as a **light** sensitive element is used as an **oscillator**.
The thermistor 1 and CdS2 and capacitor determine the time constant of the **oscillator**. As a result, the frequency will be higher as the brightness is higher and the **temperature** is **lower**.
When control terminal CONTROL is at "1" level, AND circuit at NOT circuit form a positive phase **amplifier** to continue **oscillation** at the above time constant.

L28 ANSWER 1 OF 10 WPIX (C) 2003 THOMSON DERWENT
AN 2001-272635 [28] WPIX
DNN N2001-194668 DNC C2001-082599
TI **Laser** system comprises lasing crystal having increased thermal conductivity and decreased thermal expansion coefficient when temperature of lasing crystal is lowered, **cryogenic** reservoir, and **laser** pump.
DC L03 V08
IN BROWN, D C
PA (BROW-I) BROWN D C
CYC 1
PI US 6195372 B1 20010227 (200128)* 20p
ADT US 6195372 B1 Provisional US 1997-56128P 19970819, US 1998-70531 19980430
PRAI US 1997-56128P 19970819; US 1998-70531 19980430
AB US 6195372 B UPAB: 20010522
NOVELTY - **Laser** system comprises a lasing crystal (20) having a thermal conductivity which increases and a thermal expansion coefficient which decreases as the temperature of the lasing crystal is lowered; a **cryogenic** reservoir; and a **laser** pump (12). The lasing crystal is cooled to **cryogenic** temperatures as it is pumped, thus the extractable average power output of the system is increased.
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:
(I) a method for increasing the extractable average power capability of a solid-state **laser**; and
(II) a method for decreasing the thermal distortion of a solid-state **laser**.
USE - As a solid-state **laser**.
ADVANTAGE - The inventive **laser** system has increased average power output capability. It operates in an efficient manner to produce a favorable power output by optimizing certain thermo-mechanical properties of the **laser** element. Its cooling system is cost effective for increasing the average power capability of conventional lasing crystals.
DESCRIPTION OF DRAWING(S) - The drawing shows an end view, partly in schematic, of a **cryogenically**-cooled slab **laser** system incorporating longitudinal cooling.
laser pump 12
lasing crystal 20
Dwg.1/21

L28 ANSWER 2 OF 10 WPIX (C) 2003 THOMSON DERWENT
AN 2000-610795 [58] WPIX
DNN N2000-452285 DNC C2000-182627
TI Lasing rod for **laser** resonator has crystalline or glass material doped with lasing ion(s), optical axis, flat exterior surface, and optical flat conical end surfaces.
DC L03 V08
IN BROWN, D C
PA (BROW-I) BROWN D C
CYC 1
PI US 6115400 A 20000905 (200058)* 17p
ADT US 6115400 A Provisional US 1997-56620P 19970820, US 1998-138276 19980820
PRAI US 1997-56620P 19970820; US 1998-138276 19980820
AB US 6115400 A UPAB: 20001114
NOVELTY - A lasing rod (26) comprises crystalline or glass material doped with at least one lasing ion (24) defining an optical axis, an axially extending optically flat exterior surface (44), and two optically flat conical end surfaces (28, 30). The two conical end surfaces define a convex surface and concave surface, respectively.
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a

laser resonator comprising the lasing rod as above and an outcoupler.

USE - Lasing rod is used in a **laser** resonator.

ADVANTAGE - The rod **laser** is thermally compensated and has no net depolarization on an incident beam due to TIR.

DESCRIPTION OF DRAWING(S) - The figure shows a schematic side view of a total-internal reflection thermally compensated rod **laser**.

Lasing ion 24

Lasing rod 26

Conical end surfaces 28, 30

Apex 32, 34

Tip 36

Exterior surface 44

Axis 80

Dwg.5/14

L28 ANSWER 3 OF 10 WPIX (C) 2003 THOMSON DERWENT

AN 1999-246788 [21] WPIX

DNN N1999-183868 DNC C1999-072242

TI A process for the preparation of high pressure hyper-polarized helium gas.

DC E36 J04 P31 Q75 V08

IN DARRASSE, L; GUILLOT, G; NACHER, J; TASTEVIN, G; NACHER, P J

PA (CNRS) CENT NAT RECH SCI; (CNRS) CNRS CENT NAT RECH SCI

CYC 21

PI FR 2768568 A1 19990319 (199921)* 16p

WO 9914582 A1 19990325 (199921) FR

RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE

W: IL JP US

EP 1015877 A1 20000705 (200035) FR

R: DE FR GB IT NL SE

US 6293111 B1 20010925 (200158)

JP 2001516876 W 20011002 (200172) 27p

ADT FR 2768568 A1 FR 1997-11553 19970917; WO 9914582 A1 WO 1998-FR1998 19980917; EP 1015877 A1 EP 1998-944016 19980917, WO 1998-FR1998 19980917; US 6293111 B1 Cont of WO 1998-FR1998 19980917, US 2000-527666 20000317; JP 2001516876 W WO 1998-FR1998 19980917, JP 2000-512072 19980917

FDT EP 1015877 A1 Based on WO 9914582; JP 2001516876 W Based on WO 9914582

PRAI FR 1997-11553 19970917

AB FR 2768568 A UPAB: 20011203

NOVELTY - The process comprises a stage of optical pumping at a resonant wavelength of 1083 nm in a helium gas consisting of the pure isotope He-3 or a mixture of the isotopes He-3 and He-4. The gas is subjected to a magnetic field of 0.001 - 1 Tesla during this stage and maintained at a pressure greater than 10 mbar.

DETAILED DESCRIPTION - The gas is confined in a cylindrical cell with a transparent frontal face for **laser** excitation, with a magnetic field created by a permanent magnet, antennae, electrodes producing an RF field for creation of a plasma or an IRM imager.

INDEPENDENT CLAIMS are also included for the installation (figure 1), comprising a containment cell provided with one or more valves for introduction of helium and extraction of he hyper-polarized gas, and applications of the product in NMR imagery.

USE - The hyper-polarized helium is used in magnetometry for the detection and measurement of weak magnetic fields. It can also be used for in vivo exploration of human respiratory passages by means of a conventional tomograph.

ADVANTAGE - The technique avoids the use of mechanical or **cryogenic** compression equipment, and produces high yields of hyper-polarized helium at high pressure using basic equipment. A strong electronic and nuclear polarization is obtained.

DESCRIPTION OF DRAWING(S) - Figure 1 shows a schematic drawing of an

installation.
Helium cell 1
Electrodes for application of RF field to form plasma 2,3
Diode **laser** of 50 mW 4
Circular polarizer 5
Transparent front face 6
Mirror to reflect non-absorbed light 7
A significant polarization is thus obtained in 0.1 Tesla in a gas at 32 mbar, comparable to that obtained in a weak field at 4 mbar. The corresponding magnetization, hence **amplitude** of the NMR signals detected, is higher. Significant polarization is obtainable up to pressures greater than 130 mbars.
Dwg.1/2

L28 ANSWER 4 OF 10 WPIX (C) 2003 THOMSON DERWENT
AN 1993-405284 [50] WPIX
DNN N1993-313751
TI Integrated optical waveguide coupling appts. using **cryogenic** cooling. - has mach Zehnder light steering device and provides two differentially divided optical outputs..
DC P81 U13 V07
IN TOCCI, C S
PA (RAYT) RAYTHEON CO
CYC 1
PI US 5271074 A 19931214 (199350)* 12p
ADT US 5271074 A US 1991-793770 19911118
PRAI US 1991-793770 19911118
AB US 5271074 A UPAB: 19940203
The coupling appts. has a **laser** which launches optical power into an integrated optical waveguide (IOW) within a **cryogenic** region via an imaging lens. This optical power is then equally split by a passive optical splitter, and fed to one or more 1 x 2 IOW devices. Within the **cryogenic** region, infrared sensing photodiodes provide electrical signal outputs in response to optical stimuli. The signal outputs are **amplified** and selected by a multiplexing arrangement for application as the modulating signal to one of the 1 x 2 IOW's.
Control electronics also within the **cryogenic** region supply timing and control information to the other electronics within the region. The IOW's modulate their input optical power in accordance with their respective modulating electrical input signals, and provide differential optical outputs which are directed across the thermal barrier to individual differential optical receivers.
USE/ADVANTAGE - IR detector systems. Couples electrical signals from **cryogenic** region to an ambient temp region, wherein amount of circuitry within **cryogenic** region is minimised.
Dwg.5/5

L28 ANSWER 5 OF 10 WPIX (C) 2003 THOMSON DERWENT
AN 1993-351303 [44] WPIX
CR 1995-223557 [29]
DNN N1993-271046
TI **Cryogenic** catheter for cardiac ice mapping and ablation - uses catheter with electrodes for radio frequency ablation and incorporates lumens in catheter for passage of refrigerant with one electrode used as thermal conductor.
DC P31 S05
IN HED, A; MILDER, F L; HED, A Z
PA (CRYO-N) CRYOCATH TECHNOLOGIES INC; (IMPL-N) IMPLEMED INC
CYC 19
PI WO 9320769 A1 19931028 (199344)* EN 32p
RW: AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE

W: CA JP
US 5281213 A 19940125 (199405) 10p
US 5281215 A 19940125 (199405) 14p
JP 07508666 W 19950928 (199547) 10p
EP 680284 A1 19951108 (199549) EN 32p
R: BE DE FR GB IT
CA 2118011 C 20000208 (200027) EN
JP 3209276 B2 20010917 (200156) 10p
EP 680284 B1 20021016 (200276) EN
R: BE DE FR GB IT
DE 69332414 E 20021121 (200302)

ADT WO 9320769 A1 WO 1993-US3612 19930416; US 5281213 A US 1992-870495 19920416; US 5281215 A CIP of US 1992-870495 19920416, US 1992-898142 19920615; JP 07508666 W JP 1993-518636 19930416, WO 1993-US3612 19930416; EP 680284 A1 EP 1993-912285 19930416, WO 1993-US3612 19930416; CA 2118011 C CA 1993-2118011 19930416, WO 1993-US3612 19930416; JP 3209276 B2 JP 1993-518636 19930416, WO 1993-US3612 19930416; EP 680284 B1 EP 1993-912285 19930416, WO 1993-US3612 19930416; DE 69332414 E DE 1993-632414 19930416, EP 1993-912285 19930416, WO 1993-US3612 19930416

FDT JP 07508666 W Based on WO 9320769; EP 680284 A1 Based on WO 9320769; CA 2118011 C Based on WO 9320769; JP 3209276 B2 Previous Publ. JP 07508666, Based on WO 9320769; EP 680284 B1 Based on WO 9320769; DE 69332414 E Based on EP 680284, Based on WO 9320769

PRAI US 1992-898142 19920615; US 1992-870495 19920416

AB WO 9320769 A UPAB: 20030111
The **cryogenic** catheter (10) includes a tip (12) at its distal end which is alternately used for ice mapping and radio frequency ablation. The proximal end of the catheter which is accessible to the surgeon is connected to a refrigerant source. The catheter has two lumens (14,16) within the catheter body (18) to carry the refrigerant to and away from the tip.

The tip has two electrodes (20,22) connected to an electrical signal **amplifier** which are used together to perform electro-cardiographic mapping. One of the electrodes is supplied with radio frequency current to perform radio frequency ablation, which also acts as a thermal conductor between the tip and the cardiac tissue when refrigerant is passed through the lumens.

USE/ADVANTAGE - Cardiac cryosurgery, mapping and endoscopic cryosurgery. Combines ice mapping and tissue ablation in a single device.
Dwg.1/14
Dwg.1/14

L28 ANSWER 6 OF 10 WPIX (C) 2003 THOMSON DERWENT
AN 1993-311761 [39] WPIX
DNN N1993-239988
TI **Cryogenic** signal coupler for supplying signal to processing unit at ambient temp. - has imaging lens within thermal barrier region for opto-electronic coupling, e.g. using integrated optical waveguide to switch and modulate light power.
DC P81 S01 S03 U21 V07 W04 W06
IN TOCCI, C S
PA (RAYT) RAYTHEON CO
CYC 1
PI US 5247183 A 19930921 (199339)* 13p
ADT US 5247183 A US 1991-793780 19911118
PRAI US 1991-793780 19911118
AB US 5247183 A UPAB: 19931123
The **cryogenic** signal coupling apparatus includes a **laser** which launches optical power into an integrated optical waveguide (IOW) within a **cryogenic** region via an imaging lens. This optical power is then equally split by a passive optical splitter, and fed to one

or more 12 IOW devices. Within the **cryogenic** region, a number of infrared sensing photodiodes provide electrical signal outputs in response to optical stimuli. The outputs are **amplified** and selected by a multiplexing arrangement for application as the modulating signal to one of the 12 IOWs.

Electronic control circuits also within the **cryogenic** region supply timing and control information to the other electronic circuits. The IOWs modulate their input optical power in accordance with their respective modulating electrical input signals, and provide differential optical outputs which are directed across the thermal barrier to individual differential optical receivers.

USE/ADVANTAGE - In optical detecting systems for sensing infrared radiation. Minimised electrical circuitry.

Dwg.1/5

L28 ANSWER 7 OF 10 WPIX (C) 2003 THOMSON DERWENT
AN 1993-045768 [05] WPIX
DNC C1993-020692
TI Erbium-doped fluoro-zirconate fibre optical **amplifier** - provides up conversion of pump **laser** light at 801 or 971 nanometres to visible light at 546 nanometres.
DC L03
IN BRIERLEY, M C; MILLAR, C A; WHITLEY, T J
PA (BRTE) BRITISH TELECOM PLC
CYC 17
PI WO 9301637 A1 19930121 (199305)* EN 17p
RW: AT BE CH DE DK ES FR GB GR IT LU MC NL SE
W: GB JP
EP 593568 A1 19940427 (199417) EN
R: AT BE CH DE DK ES FR GB IT LI LU NL SE
GB 2272794 A 19940525 (199419)
JP 06508961 W 19941006 (199444)
US 5369523 A 19941129 (199502) 7p
GB 2272794 B 19950524 (199524)
US 5453873 A 19950926 (199544) 7p
EP 593568 B1 20000524 (200030) EN
R: AT BE CH DE DK ES FR GB IT LI LU NL SE
DE 69231094 E 20000629 (200038)
ADT WO 9301637 A1 WO 1992-GB1234 19920708; EP 593568 A1 EP 1992-914237 19920708, WO 1992-GB1234 19920708; GB 2272794 A WO 1992-GB1234 19920708, GB 1993-25691 19931215; JP 06508961 W WO 1992-GB1234 19920708, JP 1993-502099 19920708; US 5369523 A Cont of US 1992-822287 19920117, US 1993-59412 19930511; GB 2272794 B WO 1992-GB1234 19920708, GB 1993-25691 19931215; US 5453873 A Cont of US 1992-822287 19920117, Cont of US 1993-59412 19930511, US 1994-309136 19940920; EP 593568 B1 EP 1992-914237 19920708, WO 1992-GB1234 19920708; DE 69231094 E DE 1992-631094 19920708, EP 1992-914237 19920708, WO 1992-GB1234 19920708
FDT EP 593568 A1 Based on WO 9301637; GB 2272794 A Based on WO 9301637; JP 06508961 W Based on WO 9301637; GB 2272794 B Based on WO 9301637; US 5453873 A Cont of US 5369523; EP 593568 B1 Based on WO 9301637; DE 69231094 E Based on EP 593568, Based on WO 9301637
PRAI GB 1991-14730 19910709
AB WO 9301637 A UPAB: 19930924

Amplifier comprises a fluorozirconate waveguide doped with Er ions, and a means for optical pumping coupled to the waveguide. The pump signal is capable of exciting the Er ions into their 4S(3/2) energy level by excited state absorption of pump photons. The **amplifier** provides optical gain at about 546 nm.

Also claimed is a **laser**, comprising an optical **amplifier** as above and including a pair of reflectors positioned one at each end of the waveguide and thus defining a resonant cavity. The

resonators have reflectivities such as to provide **laser** action at about 546 nm when the waveguide is pumped.

USE/ADVANTAGE - Solid state device allows the up conversion of IR light into the visible region for applications in data storage, display technology, and optical processing. Unlike previous known devices, the new device does not require liq. N2 cooling.

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L28 ANSWER 8 OF 10 WPIX (C) 2003 THOMSON DERWENT
AN 1990-322034 [43] WPIX
DNN N1990-246698
TI Electromagnetic vibrating system - has magnetic gap which attracts masses according to electric current fluctuations.
DC P43 W07 X25
IN POPPER, B
PA (RICO-N) RICOR CRYOGENIC LTD; (RICO-N) RICOR LTD
CYC 13
PI EP 393492 A 19901024 (199043)*
R: AT BE CH DE ES FR GB GR IT LI NL SE
IL 89983 A 19920818 (199244)
ADT EP 393492 A EP 1990-106967 19900411; IL 89983 A IL 1989-89983 19890417
PRAI IL 1989-89983 19890417
AB EP 393492 A UPAB: 19930928
The electromagnetic vibrating system comprising three masses, i.e. a driven mass (1), a second mass (2) formed by a first electromagnet member and a further electromagnet member forming the third mass (3). A magnetic gap attracts the second to the third mass according to the electric current fluctuations. The system has a spring (4) disposed between the first and second masses. A second spring (5) is between the second and third mass. The magnitude of the mean first and second mass determines the construction of third mass. The first and second springs are constructed according to specific equations.

USE/ADVANTAGE - E.g. for night vision **laser** telescopy **cryogenics**, material handling.

1/3

L28 ANSWER 9 OF 10 WPIX (C) 2003 THOMSON DERWENT
AN 1984-006822 [02] WPIX
DNN N1984-005004 DNC C1984-002732
TI Wavelength-tunable emerald **laser** - using single crystal emerald as **laser** medium.
DC L03 V08
IN SHAND, M L; WALLING, J C
PA (ALLC) ALLIED CORP
CYC 6
PI EP 97242 A 19840104 (198402)* EN 15p
R: DE FR GB IT
JP 59004091 A 19840110 (198407)
CA 1206243 A 19860617 (198629)
EP 97242 B 19870121 (198703) EN
R: DE FR GB IT
DE 3369439 G 19870226 (198709)
ADT EP 97242 A EP 1983-104765 19830514; JP 59004091 A JP 1983-107604 19830615
PRAI US 1982-389317 19820617
AB EP 97242 A UPAB: 19930925
Laser comprises a **laser** medium of single crystal emerald

Be3Al(SiO3)6:Cr3(+)

and a pump. The emerald may be a cylindrical rod or a rectangular slab in which the long dimension is perpendicular to the c axis. The Cr3(+) concn. in the emerald is pref. 0.001-10 at.%, on Al sites.

Pump pref. comprises a pulsed or continuous coherent or incoherent light source at below 700 nm. In a specific embodiment, the **laser** acts as a **laser amplifier** for a first **laser**. The **laser** may also include means for Q-switching.

Used in defence, communications, isotope sepn., phtochemistry, etc. **Laser** is wavelength turnable, may operate at temps. from **cryogenic** to high, and provides red to IR emission.

0/4

L28 ANSWER 10 OF 10 WPIX (C) 2003 THOMSON DERWENT
AN 1980-09384C [06] WPIX
TI Poly cyclic **laser amplifier** - used for immersion specified liquefied gases of lower refractive index than optical components.
DC A89 L03 V08
PA (STRO-I) STROBEL C
CYC 1
PI DE 2832101 A 19800131 (198006)*
PRAI DE 1978-2832101 19780721; DE 1978-828523 19800922
AB DE 2832101 A UPAB: 19930902
The Parent Patent described a polycyclic **laser amplifier** in which the light beam is stored, using a catoptric Q-switch and using water or alcohol as light switching and cooling medium.

It is now suggested to use for the intensive cooling **cryogenically** liquefied transparent gases, even when their refractive index is much smaller than that of glass or plexiglass. They include liquefied air or nitrogen with a solidification temp. below their boiling point. The preferred back pressure gas is a type such as helium with a liquefaction temp. lower than that of the **cryogenic** immersion.

L29 ANSWER 1 OF 12 WPIX (C) 2003 THOMSON DERWENT
AN 2000-652242 [63] WPIX
DNN N2000-483921
TI Compensation voltage generator circuit for oscillator circuit, determines low, high and medium temperature compensation voltages based on amplification factor and frequency temperature characteristic.
DC U23
PA (NIDD) NIPPON DENPA KOGYO KK
CYC 1
PI JP 2000269738 A 20000929 (200063)* 10p
ADT JP 2000269738 A JP 1999-70525 19990316
PRAI JP 1999-70525 19990316
AB JP2000269738 A UPAB: 20001205
NOVELTY - The output voltage which is linearly increased and changed exponentially from temperature compensation circuit, is applied to series circuit of diode and resistance to control amplification factor of inverting amplifier. Based on amplification factor and frequency **temperature** characteristic, **low**, high and medium temperature compensation voltages are determined.
DETAILED DESCRIPTION - The **low** and high **temperature** compensation circuits generate corresponding reserve voltage which is added with preset compensation voltage to obtain low, high and medium temperature compensation voltages. An INDEPENDENT CLAIM is also included for temperature compensation quartz oscillator.
USE - For generating compensation voltage for oscillator circuit used in portable telephone.
ADVANTAGE - Compensation voltage is adjusted easily, thus productivity is enhanced.
DESCRIPTION OF DRAWING(S) - The figure shows the circuit diagram of temperature compensation oscillator.
Dwg.4/10

L29 ANSWER 2 OF 12 WPIX (C) 2003 THOMSON DERWENT
AN 1999-020009 [02] WPIX
DNN N1999-016311
TI Magneto-optical recording **medium** with reproduced signal **amplification** function - has amplification layer with expanded magnetic domain, which has compensation **temperature** **lower** than room **temperature** and Curie **temperature** **lower** than Curie **temperature** of exchange-force control layer.
DC T03 W04
IN INOUE, H; MIYAZAKI, S; YOSHINARI, J
PA (DENK) TDK CORP
CYC 2
PI JP 10289497 A 19981027 (199902)* 10p

US 6120921 A 20000919 (200048)
ADT JP 10289497 A JP 1997-108089 19970410; US 6120921 A US 1998-55874 19980407
PRAI JP 1997-108089 19970410
AB JP 10289497 A UPAB: 19990113
The recording medium includes a magnetic multilayer body consisting of an amplification layer, an exchange-force control layer, and a recording layer which are sequentially mounted on a base surface side. During the recording process, a magnetic domain is formed on the recording layer through a laser beam irradiation and a recording magnetic field application. The magnetic domain of the recording layer is transferred to the amplification layer, and the transfer magnetic layer is formed through the laser beam irradiation and the recording magnetic field application during the reproduction process.

The transfer magnetic domain on the amplification layer is expanded. The amplification layer does not have a compensation temperature that is more than a room temperature, instead the Curie temperature of the amplification layer is set less than the Curie temperature of the exchange-force control layer.

ADVANTAGE - Simplifies expansion of transfer magnetic domain on amplification layer. Improves reproduction signal strength. Does not to provide magnetic layer with compensation temperature higher than room temperature, thus enabling simple magnetic layer design.
Dwg.1/2

L29 ANSWER 3 OF 12 WPIX (C) 2003 THOMSON DERWENT
AN 1995-164372 [22] WPIX
DNN N1995-128894 DNC C1995-075906
TI **Cold-temp**. nuclear fission appts. - comprises accelerator to accelerate charged pi-meson, medium into which charged pi-mesons are injected, and converter..
DC K05 X14
PA (EHEH-N) EH YG
CYC 1
PI JP 07084078 A 19950331 (199522)* 2p
ADT JP 07084078 A JP 1993-261475 19930913
PRAI JP 1993-261475 19930913
AB JP 07084078 A UPAB: 19950609
Nuclear fission appts. comprises an accelerator (1) to accelerate charged pi-mesons, a medium (2) into which the charged pi-mesons accelerated by the accelerator (1) are injected and a converter (3) by which the charged pi-meson flow **amplified** by the **medium** (2) is converted into a current, by a MHD generating mechanism.

USE/ADVANTAGE - For effectively utilising nuclear energy. By selecting various media and accelerating injected pi-mesons, nuclear fission energy is removed in the form of a pi-meson flow, even from a material that does not cause the nuclear fission due to neutrons.
Dwg.1/1

L29 ANSWER 4 OF 12 WPIX (C) 2003 THOMSON DERWENT
AN 1991-032191 [05] WPIX
DNN N1991-024723 DNC C1991-013935
TI Optical fibre amplifier with low noise and high amplification - has single-mode optical fibre with rare earth element, e.g. erbium, laser active substance and transition metal **amplifier medium**
DC A89 L03 P81 V07 V08
PA (NITE) NIPPON TELEGRAPH & TELEPHONE CORP
CYC 1
PI JP 02300727 A 19901212 (199105)*
ADT JP 02300727 A JP 1989-121228 19890515
PRAI JP 1989-121228 19890515

AB JP 02300727 A UPAB: 19930928
The amplifier comprises a single-mode optical fibre with a laser active substance such as a rare earth element (e.g. Er) or a transition metal element as the **amplifier medium**, and a light source to excite the laser active substance. The sec. covering material for the single mode optical fibre is a polymer having a coefft. of linear thermal expansion +/- 10 power (-5) deg.C or less (in magnitude) and the amplifier is equipped with a cooler mechanism for cooling a part at lesat of the optical fibre. Pref. the polymer material for sec. covering is a liq. crystal polymer.

ADVANTAGE - Ultra **low temp**. cooling is possible, permitting extremely low noise levels and high amplification. @(6pp Dwg.No.1/3)@

L29 ANSWER 5 OF 12 WPIX (C) 2003 THOMSON DERWENT
AN 1989-349859 [48] WPIX
DNN N1989-266151
TI Laser with metal vapour as **amplifying medium** - has flow of halogen gas through envelope containing metal, arranged to produce metal halide.
DC V08
IN LIVINGSTONE, E; MAITLAND, A; LIVINGSTONE, E S
PA (ENGE) EEV LTD
CYC 11
PI EP 343795 A 19891129 (198948)* EN 5p
R: AT BE CH DE FR IT LI
GB 2219128 A 19891129 (198948)
AU 8935072 A 19891130 (199003)
US 4955033 A 19900904 (199038)
GB 2219128 B 19920422 (199217)
EP 343795 B1 19940126 (199404) EN 7p
R: AT BE CH DE FR IT LI
DE 68912647 E 19940310 (199411)
ADT EP 343795 A EP 1989-304286 19890428; GB 2219128 A GB 1989-9555 19890426; US 4955033 A US 1989-347378 19890504; GB 2219128 B GB 1989-9555 19890426; EP 343795 B1 EP 1989-304286 19890428; DE 68912647 E DE 1989-612647 19890428, EP 1989-304286 19890428
FDT DE 68912647 E Based on EP 343795
PRAI GB 1988-12276 19880524; GB 1989-9555 19890426
AB EP 343795 A UPAB: 19940727
The appts. includes a quartz envelope (1) with end windows (2, 3). Two cylindrical electrodes (4, 5) are arranged coaxially at each end of the envelope with a number of cylindrical copper segments (6) between them. A pressure regulator (8) is supplied with helium buffer gas and bromine, a control circuit (11) governing the proportions and pressure of the gases applied to the envelope by the regulator.

The bromine reacts with the copper to give copper bromide with the pressure low. Pressure increases to 30 torr and discharges between the electrodes cause the copper bromide to vaporise and dissociate to produce copper vapour which is excited and laser action occurs.

ADVANTAGE - Appts. operates at **low temp**. e.g. 600 deg. C reducing insulation requirements and enabling fast start-up.
1/3
Dwg.1/3

L29 ANSWER 6 OF 12 JAPIO COPYRIGHT 2003 JPO
AN 2002-071210 JAPIO
TI ANTIFREEZING DEVICE FOR WATER HEATER HOT-WATER SUPPLIER WITH ANTIFREEZING FUNCTION USING IT
IN KAMIYA NOBUYOSHI; YOSHIKAWA SHUICHI; TANAKA HIROAKI; ASANO MASAAKI
PA NORITZ CORP

PI JP 2002071210 A 20020308 Heisei
AI JP 2000-256496 (JP2000256496 Heisei) 20000825
PRAI JP 2000-256496 20000825
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2002
AB PROBLEM TO BE SOLVED: To eliminate various kinds of inconvenience which occur when a water heater is started for hot-water supply while the water heater is operated for antifreezing.
SOLUTION: An antifreezing device is used for such a water heater that a reheating and circulating circuit and a hot-water supplying circuit are heated by means of a common combustion burner in a one-boiler two-circuit heat exchanger can body, and a heating circuit is branched from the midpoint of the reheating and circulating circuit through a three-way selector valve. In the case the outside air temperature or the temperature of water staying in the heating circuit drops to a **freezing** preventing **temperature** (S3 and S4) while the operation of the water heater for heating and bath is stopped (S1 and **S2**), a circulating **pump** is started when the operation of the water heater for hot-water supply is being stopped (S5 and S6). The object of the antifreezing operation of the water heater is switched to heating and bath or heating only in accordance with discriminated results of circulation (S7, S8, and S9). After the circulating pump is operated for a prescribed period of time, the pump is returned by stopping the pump for a prescribed period of time (S10-S12). When the water heater is started for hot-water supply while the water heater is operated for antifreezing, the circulating pump is forcibly stopped by omitting the steps S6-S12.

L29 ANSWER 7 OF 12 JAPIO
AN 2002-056588 JAPIO
TI MAGNETO-OPTICAL RECORDING MEDIUM
IN SEKINE MASAKI; TANI MANABU; AWANO HIROYUKI
PA HITACHI MAXELL LTD
PI JP 2002056588 A 20020222 Heisei
AI JP 2000-242458 (JP2000242458 Heisei) 20000810
PRAI JP 2000-242458 20000810
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2002
AB PROBLEM TO BE SOLVED: To provide a magneto-optical recording medium in which ultra minute recording marks as small as <=0.2 μm can be surely formed.
SOLUTION: In the magneto-optical recording **medium** for MAMMOS (magnetic **amplifying** magneto-optical system), the composition of the magnetic material is controlled in such a manner that the compensation temperature of the magnetic material constituting a magnetic domain amplifying and reproducing layer is higher than room temperature and that the Curie **temperature** Tcr is **lower** than the Curie temperature Tcw of the magnetic material constituting a recording layer. Therefore, saturation magnetization in the magnetic domain amplifying and reproducing layer is eliminated in the recording temperature region when information is recorded. As a result, ultra minute marks as small as <=0.2 μm, for example, can be surely formed in the recording layer. By forming a controlling layer for a leak magnetic field having higher Curie temperature than that of the recording layer, changes in the leak magnetic field in the recording layer with temperature can be suppressed and the power margin for reproducing light can be increased.

L29 ANSWER 8 OF 12 JAPIO
AN 2000-029078 JAPIO
TI DISTRIBUTIVES-SELECTION TYPE OPTICAL SWITCH AND ITS MANUFACTURE
IN WATANABE TOSHIO; TOMARU AKIRA; IMAMURA SABURO; TOYODA SEIJI; KURIHARA TAKASHI

PA NIPPON TELEGR & TELEPH CORP <NTT>
PI JP 2000029078 A 20000128 Heisei
AI JP 1998-199036 (JP10199036 Heisei) 19980714
PRAI JP 1998-199036 19980714
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2000
AB PROBLEM TO BE SOLVED: To realize a distributive optical switch low in insertion loss by constituting a branched optical waveguide of a polymer material.
SOLUTION: In this manufacture, a branched optical waveguide 42 using a polymer material as the material, is formed on a substrate 41 on which a semiconductor optical gate switch 40 using a semiconductor optical **amplification medium** as a material for the switch 40, is also formed. At this time, as a material for the semiconductor optical gate switch 40, for example, when the operating wavelength is that of a 1.55 μm band, an InGaAsP-based material is used as a material of an active layer in the switch 40 and as the material of the branched optical waveguide 42, an epoxy-based resin, acrylic resin, polyimide resin, polycarbonate resin, silicone resin, or the like, can be used. Since such a high polymer material is formed into the optical waveguide 42 in a **low temp**. process at about <=200°C, after forming or mounting the semiconductor optical gate switch 40 on the substrate 41, the branched optical waveguide 42 can be formed on the same substrate 41. Further, by using a photocurable resin as the high polymer material, the manufacturing stage of the optical wave guide 42 can be simplified.

L29 ANSWER 9 OF 12 JAPIO
AN 1999-306607 JAPIO
TI MAGNETO-OPTICAL RECORD MEDIUM AND REPRODUCING METHOD
IN HOZUMI YASUSHI; ISHII KAZUNORI
PA CANON INC
PI JP 11306607 A 19991105 Heisei
AI JP 1998-106294 (JP10106294 Heisei) 19980416
PRAI JP 1998-106294 19980416
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1999
AB PROBLEM TO BE SOLVED: To provide a magneto-optical record medium which is capable of more increasing the amplitude of a reproduced signal and which is capable of more increasing the output of the reproduced signal accompanying this and which is capable of improving the quality of the signal and to provide its reproducing method.
SOLUTION: This record medium is constituted of a first magnetic layer 11 whose coercive force of magnetic domain wall is relatively small as compared with that of a fourth lagnetic layer 14 at least in a recorded information detecting area in a reproducing beam spot and which consists of a perpendicularly magnetiized film and which is magnetically coupled among respective information tracks with each other, a second magnetic layer 12 whose mobility of magnetic domain wall is relatively small as compared with that of the fourth lagnetic layer 14 at least in the recorded information detecting area in the reproducing beam spot and which consists of a perpendicularly magnetiized film, a third magnetic layer 13 consisting of a magnetic layer whose Curie **temp**. is **lower** than those of the first, second and fourth magnetic layers and the fourth magneticlayer 14 consisting of a perpendicularly magnetic film. By this constitution, this record **medium** can **amplify** the reproduced signal to an amplitude equal to or larger than the amplitude of a reproduced signal in an ordinary DWDD(domain wall displacement detection) system.

L29 ANSWER 10 OF 12 JAPIO
AN 1997-273459 JAPIO

TI DEICING DEVICE FOR FUEL INJECTION VALVE
IN SAKUMA TORU; TANAKA YOSHIKAZU
PA UNISIA JECS CORP
PI JP 09273459 A 19971021 Heisei
AI JP 1996-85288 (JP08085288 Heisei) 19960408
PRAI JP 1996-85288 19960408
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1997
AB PROBLEM TO BE SOLVED: To prevent icing of water in an injection hole part of a fuel injection valve by quickly raising a fuel temperature just after a start of an engine operation.
SOLUTION: If a temperature of fuel fed to a fuel injection valve is the predetermined temperature (at which water is prevented from frostily adhering to the tip part, of the fuel injection valve) or more (S1), a fuel pump is controlled on the basis of a discharge quantity, which is set to the approximately constant value, of the fuel **pump** at an ordinary temperature (**S2**). If the fuel temperature is below the predetermined temperature (S1), the fuel pump is controlled on the basis of the discharge quantity obtained by reducing the discharge quantity of the fuel pump at the ordinary temperature by a fixed value (S3). These processes are repeated (S4) until an ignition switch is turned off. In this way, a flow rate of the fuel flowing in a fuel supply pipe is reduced when the fuel **temperature** is **low**, and an engine combustion heat, which the fuel inside the fuel supply pipe receives via the fuel injection valve, is increased, so that the temperature of the fuel fed to the fuel injection valve is quickly increased.

L29 ANSWER 11 OF 12 JAPIO COPYRIGHT 2003 JPO
AN 1995-084078 JAPIO
TI **LOW TEMPERATURE** FISSION DEVICE
IN YOSHIDA HIROSHI
PA II H:KK
PI JP 07084078 A 19950331 Heisei
AI JP 1993-261475 (JP05261475 Heisei) 19930913
PRAI JP 1993-261475 19930913
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1995
AB PURPOSE: To reduce the energy loss in converting from heat to electricity by irradiating specific medium with accelerated charged pions and amplifying the charged pions in the medium.
CONSTITUTION: A pulse-like positive charged pion flow of 320 MeV is formed with an accelerator 1 and this pion flow is caused to go in to a medium 2 constituted of uranium 235. The charged pions are taken in nucleus in the medium which have not caused fission in succession, and cause fission. The released energy at the moment is converted to a part of the pion energy and the intensity of the charged pions is increased in the cascade. The positively charged pion flow **amplified** in the **medium** 2 is converted to electric current in a conductive body, using magnetohydrohynamic(MHD) generator mechanism 3. Thus, by directly converting the nuclear fission energy to the charged pion flow without passing through the form of thermal energy, the energy loss in converting the thermal energy to electric energy can be avoided.

L29 ANSWER 12 OF 12 JAPIO COPYRIGHT 2003 JPO
AN 1988-148048 JAPIO
TI HEAT PUMP HOT WATER SUPPLY APPARATUS
IN OTSUBO MICHIO; OKUMA KEIKO
PA MITSUBISHI ELECTRIC CORP
PI JP 63148048 A 19880620 Showa
AI JP 1986-295180 (JP61295180 Showa) 19861211
PRAI JP 1986-295180 19861211

SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1988

AB PURPOSE: To improve the overall energy efficiency by operating a **low-temperature** side heat pump hot water supply apparatus at a high performance by providing a control means that controls the ON and OFF of a high-temperature side heat pump hot water supply apparatus as well as the **low-temperature** side heat pump hot water supply unit.

CONSTITUTION: When, upon turning ON the power source, the operation schedule of a high-temperature side heat pump hot water supply apparatus 2 and a **low- temperature** side heat pump hot water supply apparatus 10 is OFF in the step **S2**, the high-temperature side heat **pump** hot water supply apparatus 2 and **low-temperature** side heat pump hot water supply apparatus 10 are turned OFF in the step 4. If they are ON, they proceed to the step S3, where if the hot water temperature in the hot water tank is higher than the predetermined set temperature, the high-temperature side heat pump hot water supply unit 2 and **low-temperature** side heat pump hot water supply unit 10 are turned OFF in the step S5. When the hot water temperature in the hot water tank is **lower**, the high-**temperature** side heat pump hot water supply apparatus 2 and **low-temperature** side heat pump hot water supply apparatus 10 are turned ON in the step S6. In this manner, a highly energy efficient operation is made possible.

L35 ANSWER 1 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 2003-219973 [21] WPIX
DNN N2003-175417 DNC C2003-055848
TI Fabrication of carbon nanotube film used in making field emission devices, involves subsequently synthesizing metallic catalyst layer and carbon nanotube film using hydrocarbon precursor at **low temperature**.
DC E36 L02 L03 P42 S02 S03 U11 U12 V05 X25 X26
IN SUN, Y; SUN, Z
PA (SUNY-I) SUN Y; (SUNZ-I) SUN Z
CYC 1
PI US 2002160111 A1 20021031 (200321)* 15p
ADT US 2002160111 A1 Provisional US 2001-285977P 20010425, US 2002-127296 20020422
PRAI US 2001-285977P 20010425; US 2002-127296 20020422
AB US2002160111 A UPAB: 20030328
NOVELTY - A carbon nanotube film is fabricated by subsequently synthesizing catalyst layer and carbon nanotube film using hydrocarbon precursor. The catalyst layer consists of transition metals and related alloys, compound or composite. The carbon nanotube film is synthesized by chemical vapor deposition at a pressure of 10-4 torr to 1 atmosphere and a temperature of 300-800 deg. C.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for the following:

(1) A method for fabrication of field emission cathodes comprising:

(a) synthesizing conductive layer (302) on substrate (301);

(b) forming patterns using dielectric materials (303) as insulator by photolithography or screen-printing process; and

(c) selectively growing carbon nanotubes film arrays; and

(2) A field emission devices comprising:

(a) cathode consisting of substrate, conductive layer and electron emission layer, vacuum gap and anode;

(b) conductive layer on substrate surface; and

(c) electron emission layer consisting of carbon nanotubes on the conductive layer.

USE - The method is for fabricating carbon nanotube film used in making field emission devices that are useful for flat panel display devices, vacuum electronic devices or cold cathode light source. The vacuum electronic devices comprise microwave **amplifier**, vacuum-electronic sensor, vacuum pressure gauge, spectrometer, electron microscopy, or electron beam source (all claimed).

ADVANTAGE - The method provides carbon nanotube film possessing good electron filed emission properties, lower threshold field, and high emission current density. It is performed in **low temperature**, thus allowing a uniform growth of carbon nanotube thin films over a large area. It provides field emission display devices which exhibit uniform and high density of luminescent spots on anode at low field using carbon nanotube film arrays as cathodes.

DESCRIPTION OF DRAWING(S) - The drawing shows a cross section schematic of fabricating a field emission cathode on a substrate.
Substrate 301
Conductive layer 302
Dielectric materials 303
Dwg.3a/10

L35 ANSWER 2 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 2003-019446 [01] WPIX
DNN N2003-014894 DNC C2003-005025
TI Manufacture of phosphosilicate fiber used in fabrication of Raman

lasers or **amplifiers**, involves forming preform containing phosphorus doped silica and drawing phosphosilicate fiber from preform at preset temperature.

DC L01 P81 V07 V08

IN BUBNOV, M M; DELISO, E M; DIANOV, E M; GURYANOV, A N; KHOPIN, V F; KUKSENKOV, D V; MURTAGH, M T; WANG, J; BUBNOV, M

PA (BUBN-I) BUBNOV M M; (DELI-I) DELISO E M; (DIAN-I) DIANOV E M; (GURY-I) GURYANOV A N; (KHOP-I) KHOPIN V F; (KUKS-I) KUKSENKOV D V; (MURT-I) MURTAGH M T; (WANG-I) WANG J; (CORG) CORNING INC

CYC 97

PI WO 2002088041 A1 20021107 (200301)* EN 42p
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG UZ VN YU ZA ZM ZW
US 2002186942 A1 20021212 (200301)

ADT WO 2002088041 A1 WO 2002-US14003 20020501; US 2002186942 A1 Provisional US 2001-287909P 20010501, US 2002-136654 20020430

PRAI US 2001-287909P 20010501; US 2002-136654 20020430

AB WO 200288041 A UPAB: 20030101

NOVELTY - Manufacture of phosphosilicate fiber involves forming preform containing phosphorus doped silica, and drawing phosphosilicate fiber from preform at 1700-1900 deg. C.

DETAILED DESCRIPTION - The preform is formed by vapor depositing silica doped with phosphorus pentaoxide silica.

An INDEPENDENT CLAIM is included for optical fiber.

USE - For optical fibers (claimed) and fabrication of efficient Raman **lasers** or **amplifiers**.

ADVANTAGE - The relatively **low** draw **temperature** of fiber from preform allows lower attenuation (optical losses) than those associated with highly phosphorus pentoxide doped fibers made by high temperature draw process. The lower attenuation is the result of reduction in stress in core-cladding interface and also reduction in defects in imperfections at the interfaces which contribute to the optical losses due to scattering.

DESCRIPTION OF DRAWING(S) - The figure shows the schematic illustration of the modified chemical vapor deposition preform collapsing process.

Dwg.3/15

L35 ANSWER 3 OF 66 WPIX (C) 2003 THOMSON DERWENT

AN 2002-171218 [22] WPIX

DNN N2002-130259

TI Semiconductor ridge **laser** for coupling to single-mode optical fiber in optical communications systems, has guiding section with narrow parallel, diverging and wide parallel regions.

DC U12 V07 V08

IN BALSAMO, S; GHISLOTTI, G; MORASCA, S; TREZZI, F

PA (OPTI-N) OPTICAL TECHNOLOGIES ITAL SPA; (CORG) CORNING OTI SPA; (BALS-I) BALSAMO S; (GHIS-I) GHISLOTTI G; (MORA-I) MORASCA S; (TREZ-I) TREZZI F

CYC 95

PI WO 2001048874 A2 20010705 (200222)* EN 42p
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
AU 2001026755 A 20010709 (200222)
EP 1243055 A2 20020925 (200271) EN

R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR
US 2003031222 A1 20030213 (200314)
KR 2002081237 A 20021026 (200317)
ADT WO 2001048874 A2 WO 2000-EP13057 20001220; AU 2001026755 A AU 2001-26755 20001220; EP 1243055 A2 EP 2000-990008 20001220, WO 2000-EP13057 20001220; US 2003031222 A1 WO 2000-EP13057 20001220, US 2002-168838 20020621; KR 2002081237 A KR 2002-708322 20020626
FDT AU 2001026755 A Based on WO 200148874; EP 1243055 A2 Based on WO 200148874
PRAI US 2000-177353P 20000124; EP 1999-126003 19991227
AB WO 200148874 A UPAB: 20020409
NOVELTY - A semiconductor ridge **laser** has a ridge (102) with a narrow parallel region (106), a diverging region (108) and a wide parallel region (110) adjacent to the output. A pump region for the **laser** is less than the entire region of the ridge and is T-shaped. The ridge has a depth of about 350-550 nm and the narrow parallel region is longer than 0.4 times the length of the ridge. The wide parallel region enables the **laser** to have low thermal resistance.
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for an optical fibre **amplifier**.
USE - In optical communication systems.
ADVANTAGE - **Low** operating **temperature**, **low** power density in the **laser** cavity, low astigmatism.
DESCRIPTION OF DRAWING(S) - The drawing shows a plan view of the invention.
Laser 100
Ridge 102
Narrow region 106
Diverging region 108
Wide parallel region 110
Upper layers 201
Lower layers 203
Dwg.1/22

L35 ANSWER 4 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 2001-355313 [37] WPIX
CR 2001-441284 [47]; 2002-444372 [47]
DNC C2001-110088
TI Formation of phosphate-based glass composite comprises applying phosphorus-containing solution to two glass surfaces, contacting the surfaces, and curing formed composite.
DC L01 L03
IN CONZONE, S D; HAYDEN, J S; MARKER, A J
PA (KALB-I) KALBER T; (ZEIS) SCHOTT GLASS TECHNOLOGIES INC; (ZEIS) SCHOTT GLAS
CYC 95
PI WO 2001032580 A2 20010510 (200137)* EN 83p
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
AU 2001036397 A 20010514 (200149)
EP 1228556 A2 20020807 (200259) EN
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR
CN 1387625 A 20021225 (200324)
CN 1387690 A 20021225 (200324)
ADT WO 2001032580 A2 WO 2000-US41721 20001101; AU 2001036397 A AU 2001-36397 20001101; EP 1228556 A2 EP 2000-991912 20001101, WO 2000-US41721 20001101;

CN 1387625 A CN 2000-815174 20001101; CN 1387690 A CN 2000-815319 20001101
FDT AU 2001036397 A Based on WO 200132580; EP 1228556 A2 Based on WO 200132580
PRAI US 1999-430885 19991101
AB WO 200132580 A UPAB: 20030410
NOVELTY - A phosphate-based glass composite is formed by processing surfaces of two phosphate-based glasses to provide bonding surfaces, applying a phosphorus-containing solution to at least one bonding surface, contacting the surfaces, and retaining the surfaces in contact until they join while curing the composite.
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a hybrid comprising two monoliths sandwiching a phosphorus-containing solution.
USE - The method can be used for joining similar and/or dissimilar materials such as crystals, glasses, and metallic coatings to form integrated photonic devices, photonic sources, modulation devices, polarization preserving/modulating devices, multiplexing/demultiplexing devices, optical **amplification** devices, dispersion compensation devices, switches, substrates for multiple wavelength arrays and waveguide **lasers**, self-cooling **laser** sources, and hybrid photonic devices. Preferably, the composite can be used in photonic devices e.g. multiple-wavelength **laser** array, low-loss splitter, and self-cooling **laser** (claimed).
ADVANTAGE - The bond has low birefringence and is strong and virtually photonically invisible. The method is conducted at **low temperature**. The composite can survive oil-based or water-based cutting, grinding, and polishing.
Dwg.0/7

L35 ANSWER 5 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 2001-112104 [12] WPIX
DNC C2001-033212
TI High-strength polyester, nylon or polyether-ketone fibers, obtained by stretching filaments which are being heat-softened up to at least a glass transition pt by irradiating with infrared radiation.
DC A23 F01
IN IKAGA, T; KOBAYASHI, A; OHKOSHI, Y; OKUMURA, W; YAMAGUCHI, T
PA (OHKO-I) OHKOSHI Y; (UEDA-N) UEDA TEXTILE SCI FOUND
CYC 23
PI WO 2000073556 A1 20001207 (200112)* JA 35p
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
W: CN IN JP KR US
US 6497952 B1 20021224 (200303)
JP 2001500038 X 20021224 (200313)
ADT WO 2000073556 A1 WO 2000-JP3498 20000531; US 6497952 B1 WO 2000-JP3498 20000531, US 2001-743514 20010111; JP 2001500038 X WO 2000-JP3498 20000531, JP 2001-500038 20000531
FDT US 6497952 B1 Based on WO 200073556; JP 2001500038 X Based on WO 200073556
PRAI JP 1999-345187 19991028; JP 1999-189473 19990531; JP 1999-214140 19990623; JP 1999-231843 19990714; JP 1999-325878 19991012; JP 1999-325879 19991012
AB WO 200073556 A UPAB: 20010302
NOVELTY - High-strength synthetic fibers, obtained by stretching filaments which are being heat-softened up to at least a glass transition pt by irradiating with infrared radiations are fibers selected from polyester fiber, nylon fibers and polyether-ketone fibers.
USE - Not described.
ADVANTAGE - The invented synthetic fibers have extremely high strength.
Dwg.0/0

L35 ANSWER 6 OF 66 WPIX (C) 2003 THOMSON DERWENT

AN 2000-610681 [58] WPIX
CR 1999-603119 [52]
DNN N2000-452191 DNC C2000-182544
TI Manufacture of optical waveguide devices, involves depositing soot layer on substrate by reacting silicon tetrachloride, oxygen, perchloryl fluoride, exposing layer to dopant and sintering doped layer.
DC E36 L01 V07
IN ATKINS, R M; WINDELER, R S
PA (LUCE) LUCENT TECHNOLOGIES INC
CYC 1
PI US 6109065 A 20000829 (200058)* 4p
ADT US 6109065 A CIP of US 1998-63900 19980422, US 1998-65961 19980424
PRAI US 1998-65961 19980424; US 1998-63900 19980422
AB US 6109065 A UPAB: 20001114
NOVELTY - An optical waveguide device is formed by depositing a soot layer on a substrate by reacting a mixture of silicon tetrachloride, oxygen and perchloryl fluoride at 1000-1900 deg. C, exposing the soot layer formed to a specific dopant and sintering the doped soot layer to form a layer of doped glass on substrate.
USE - For manufacturing optical waveguide devices such as **lasers** and **amplifiers**.
ADVANTAGE - The process effectively produces optical waveguide devices using modified chemical vapor deposition (MCVD) process. A reaction **temperature lowering** gas, added to silicon tetrachloride **lowers** the reaction **temperature** and enables deposition of soot on the tube wall at **temperature lower** than sintering **temperature**. Hence more uniform porous soot layer is deposited along the length of the preform to permit more uniform solution doping.
Dwg.0/2

L35 ANSWER 7 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 2000-564390 [52] WPIX
DNN N2000-416800
TI Light wavelength monitoring system has diffractor to diffract light of predetermined wavelength at predetermined angle towards photodiodes which are arranged corresponding to filters.
DC S03 V08 W02
IN CAO, X; ZHENG, Y
PA (OPLI-N) OPLINK COMMUNICATIONS INC
CYC 1
PI US 6088142 A 20000711 (200052)* 13p
ADT US 6088142 A US 1997-816089 19970313
PRAI US 1997-816089 19970313
AB US 6088142 A UPAB: 20001018
NOVELTY - The light wave of predetermined wavelength l1' from the DFB **laser** (110) is received by refractor (130) at an angle t' towards a diffractor. The diffractor diffracts light of wavelength l2' towards filters (140,142) which are placed at predetermined angle from diffractor. Photodiodes (150,152) are arranged corresponding to filters, which receive diffracted light from the corresponding filter.
DETAILED DESCRIPTION - The system has a differential **amplifier** (160) which receives the signals indicating the intensity of light received by the photodiodes (150,152) and calculates the difference in the signals. In response to the signal from the differential **amplifier**, the feedback circuit raises or **lowers** the **temperature** of cavity of the DFB **laser** (110) as required to bring the wavelength of the light produced by the DFB **laser** (110) back to the original value l1'.
An INDEPENDENT CLAIM is also included for method for monitoring the wavelength of the light produced by the light source.

USE - For monitoring and controlling the wavelength of light in wavelength division multiplexing (WDM) system used in communication networks.

ADVANTAGE - Monitors wavelength without significant interruption of the beam. The system is compact, low in cost and requires very little alignment.

DESCRIPTION OF DRAWING(S) - The figure shows block diagram of system for monitoring and controlling multiple wavelengths.

DFB **laser** 110
Refractor 130
Filters 140,142
Photodiodes 150,152
Differential **amplifier** 160
Dwg.2/7

L35 ANSWER 8 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 2000-431441 [37] WPIX
CR 2002-582289 [62]
DNN N2000-321988 DNC C2000-131127
TI Stress-engineered substrate production involves maintaining heteroepitaxial layer under compressive and tensile stress, based on comparison result of lattice constants of epitaxial and substrate materials.
DC L03 P73 U11 U12
IN EJECKAM, F; LO, Y
PA (NOVA-N) NOVA CRYSTALS INC; (EJEC-I) EJECKAM F; (LOYY-I) LO Y
CYC 22
PI WO 2000034989 A1 20000615 (200037)* EN 23p
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
W: JP
US 2001026873 A1 20011004 (200161)
EP 1145294 A1 20011017 (200169) EN
R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
US 6329063 B2 20011211 (200204)
TW 457552 A 20011001 (200243)
JP 2002532873 W 20021002 (200279) 23p
ADT WO 2000034989 A1 WO 1999-US27784 19991123; US 2001026873 A1 US 1998-210166 19981211; EP 1145294 A1 EP 1999-961781 19991123, WO 1999-US27784 19991123; US 6329063 B2 US 1998-210166 19981211; TW 457552 A TW 1999-121135 20000211; JP 2002532873 W WO 1999-US27784 19991123, JP 2000-587360 19991123
FDT EP 1145294 A1 Based on WO 200034989; JP 2002532873 W Based on WO 200034989
PRAI US 1998-210166 19981211
AB WO 200034989 A UPAB: 20021209

NOVELTY - A heteroepitaxial layer (48) with a material having specific lattice constant, is formed on a substrate (46). The lattice constant of substrate and epitaxial material is compared. The epitaxial layer is made to exhibit compressive and tensile stress when the lattice constant of epitaxial material is greater or lesser than the substrate material, respectively.

DETAILED DESCRIPTION - The compressive or tensile stress is exhibited by epitaxial layer for a range of temperatures. The range is from annealing **temperature** to **lowest temperature** of substrate. An INDEPENDENT CLAIM is also included for stress engineered substrate.

USE - For producing stress-engineered substrate used in the manufacture of electronics and opto-electronic devices such as RF **amplifiers** in wireless communication, **lasers**, LEDs, detectors, etc.

ADVANTAGE - High quality heteroepitaxial layer is achieved by subjecting epitaxial layer to compressive or tensile stress based on

lattice constant.
DESCRIPTION OF DRAWING(S) - The figure shows the cross-sectional view of stress engineered substrate.
Substrate 46
Heteroepitaxial layer 48
Dwg.8/10

L35 ANSWER 9 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1999-554570 [47] WPIX
DNN N1999-410667
TI **Laser** diode drive circuit in copier, printer, facsimile - has **laser** diode which is driven by current having **amplitude** level equal to modulating signal when **temperature** is **lower** than predetermined **temperature**.
DC P75 U12 V08
IN KAWASAKI, S; OOMURA, M
PA (CANO) CANON KK
CYC 2
PI JP 11240198 A 19990907 (199947)* 12p
US 6259466 B1 20010710 (200141)
ADT JP 11240198 A JP 1998-43339 19980225; US 6259466 B1 US 1999-253511 19990222
PRAI JP 1998-43339 19980225; JP 1998-48173 19980227
AB JP 11240198 A UPAB: 19991116
NOVELTY - When the **temperature** is **lower** than predetermined **temperature**, the **laser** diode is driven by the current having **amplitude** level equal to modulating signal, else, it is driven by current having same level as that of bias current.
USE - In copier, printer, facsimile.
ADVANTAGE - The drive current of **laser** diode is not based on temperature change but is controlled stably. DESCRIPTION OF DRAWING(S) - The figure shows block diagram of **laser** diode drive circuit.
Dwg.3/13

L35 ANSWER 10 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1998-608475 [51] WPIX
DNN N1998-473243
TI Gas **laser** active element - has ballast reservoir connected to working space from side of main electrode and uses change of current in reservoir to compensate pressure change in active element.
DC V08
IN BYKOVSKII, V F; MIRETSKII, B P
PA (BYKO-I) BYKOVSKII V F
CYC 1
PI SU 1099806 A1 19980427 (199851)* 4p
ADT SU 1099806 A1 SU 1982-3442469 19820524
PRAI SU 1982-3442469 19820524
AB SU 1099806 A UPAB: 19981223
The working space (1) of an active element is filled with krypton and an arc discharge is excited between electrodes (2,3), acting respectively as a cathode and anode. In the working space in the form of a discharge plasma column, the **laser** radiation is **amplified** because of the induced transitions of excitation levels of the krypton ions. The main column is characterised by a discharge maintaining voltage of 200-300 volts which depends on the gas pressure. During increase of pressure, the discharge maintaining voltage is increased and vice-versa.
A glow discharge is formed between an additional cathode (5) and anode (3) by a voltage stabiliser (6) and **low** **temperature** plasma is formed in a ballast reservoir (4), causing change of pressure of the working gas, which is self-stabilised by change

of the voltage drop between electrodes (2,3), causing change of the current of the additional discharge in reservoir (4) and compensation of pressure change of the gas in the working space (1).

USE - Construction of gas **lasers**

ADVANTAGE - Prolonged duration of stability of radiation

Dwg.1/1

L35 ANSWER 11 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1998-055534 [06] WPIX
CR 1985-136424 [23]; 1990-180665 [24]
DNN N1998-044037
TI Superfluorescent broadband fibre optic light source - has fibre doped with **laser** material coupled to multiplexing coupler with source of pumping illumination providing pumping light to doped fibre and coupler adjusted to have zero per cent coupling efficiency at wavelength of source.
DC P81 V07 V08
IN DIGONNET, M J F; FLING, J J; KIM, B Y; LIU, K; SHAW, H J
PA (STRD) UNIV LELAND STANFORD JUNIOR
CYC 4
PI EP 817335 A2 19980107 (199806)* EN 28p
R: DE FR GB IT
EP 817335 B1 20020508 (200231) EN
R: DE FR GB IT
DE 68929397 E 20020613 (200246)
ADT EP 817335 A2 Div ex EP 1989-312666 19891205, EP 1997-111612 19891205; EP 817335 B1 Div ex EP 1989-312666 19891205, EP 1997-111612 19891205; DE 68929397 E DE 1989-629397 19891205, EP 1997-111612 19891205
FDT EP 817335 A2 Div ex EP 372907; EP 817335 B1 Div ex EP 372907; DE 68929397 E Based on EP 817335
PRAI US 1988-281088 19881207
AB EP 817335 A UPAB: 20020722
The source comprises a pump source (100) which emits pumping light at a spectrum of wavelengths. An optical fibre (108) is doped with a **laser** material. The intensity of the pumping light at a spectrum of wavelengths is sufficient to induce superfluorescent emission of **laser** light in the **laser** material at a second spectrum of wavelengths. The **laser** light has a forward signal (114) and a backward signal (112) and is contradirectional at locations where the **laser** light is emitted. The fibre optic light source has a multiplexing coupler (104) which is optically connected to receive light from the pump source and inputs the pump light into an end of the optical fibre.

The coupler is wavelength dependent to provide a coupling efficiency for the spectrum of wavelengths which is different from the second spectrum of wavelengths. A reflector is coupled to a second end of the optical fibre to reflect one of the signals from the second end of the optical fibre into the multiplexing coupler. The reflected signal is output from the coupler.

ADVANTAGE - Multiplexer simultaneously and efficiently couples both pumping radiation and signal to be **amplified** on to fibre which contains crystal. Has low temporal coherence, high intensity, high spatial coherence, **low temperature** dependence and is well adapted for use in fibre optic devices.

Dwg.3/20

L35 ANSWER 12 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1996-518564 [51] WPIX
DNC C1996-162802
TI Cathode esp. cold cathode for micro-electronic devices - obtd. by depositing carbonitride by **laser** ablation or sputtering of

carbon in nitrogen gas..
DC L03 V05
IN PRYOR, R W
PA (UYWA-N) UNIV WAYNE STATE
CYC 70
PI WO 9635640 A1 19961114 (199651)* EN 23p
RW: AT BE CH DE DK EA ES FI FR GB GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG
W: AL AM AT AU AZ BB BG BR BY CA CH CN CZ DE DK EE ES FI GB GE HU IS JP KE KG KP KR KZ LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK TJ TM TR TT UA UG UZ VN
AU 9654872 A 19961129 (199712)
JP 11504753 W 19990427 (199927) 21p
KR 99008433 A 19990125 (200015)
US 6388366 B1 20020514 (200239)
ADT WO 9635640 A1 WO 1996-US5358 19960417; AU 9654872 A AU 1996-54872 19960417; JP 11504753 W JP 1996-534081 19960417, WO 1996-US5358 19960417; KR 99008433 A WO 1996-US5358 19960417, KR 1997-707963 19971108; US 6388366 B1 US 1995-438118 19950508
FDT AU 9654872 A Based on WO 9635640; JP 11504753 W Based on WO 9635640; KR 99008433 A Based on WO 9635640
PRAI US 1995-438118 19950508
AB WO 9635640 A UPAB: 19961219
Cathode is made from C nitride, pref in the form of amorphous, poly and/or mono-C nitride. The C may be doped n-type with C, N, Si or P and is pref H2 annealed. Cathode is mfd by **laser** ablating C in N2 to deposit C nitride on a substrate; or by sputtering C in N2 from a target onto the substrate. Electronic device contg C nitride cathode is claimed.
USE - as a cold emitter in display devices, power **amplifiers**, vacuum micro-electronics etc.
ADVANTAGE - cathodes may be operated at **temps** as **low** as 20deg.C with extraction voltages as low as 10-2V/micron. They are capable of producing currents as high as 100A/cm2.
Dwg.0/4

L35 ANSWER 13 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1996-356304 [36] WPIX
DNN N1996-300493
TI Write test method for pit edge recording method for optical data recording and reproduction - recording predetermined signal on recording medium while varying power level of **laser** beam, reproducing data and using to adjust power for high and **low temp**. recording states.
DC T03 W04
IN ASHINUMA, T; KIMURA, S; MIYASHITA, A; SHIRATORI, T
PA (CANO) CANON KK
CYC 7
PI EP 725397 A2 19960807 (199636)* EN 43p
R: DE FR GB IT NL
JP 08203080 A 19960809 (199642) 13p
EP 725397 A3 19961227 (199710)
JP 09035357 A 19970207 (199716) 12p
JP 09035358 A 19970207 (199716) 15p
US 5815477 A 19980929 (199846)
EP 725397 B1 19990915 (199942) EN
R: DE FR GB IT NL
DE 69604209 E 19991021 (199950)
ADT EP 725397 A2 EP 1996-300643 19960130; JP 08203080 A JP 1995-14099 19950131; EP 725397 A3 EP 1996-300643 19960130; JP 09035357 A JP 1995-182613 19950719; JP 09035358 A JP 1995-182614 19950719; US 5815477 A US 1996-594300 19960130; EP 725397 B1 EP 1996-300643 19960130; DE 69604209

E DE 1996-604209 19960130, EP 1996-300643 19960130
FDT DE 69604209 E Based on EP 725397
PRAI JP 1995-182614 19950719; JP 1995-14099 19950131; JP 1995-182613 19950719
AB EP 725397 A UPAB: 19960913
The method records information by modulating the power of **laser** beam to create high and **low temp**. states on a recording medium. The method involves recording a predetermined signal on the recording medium by varying the **laser** power level, and reproducing the recorded information. The power level of the **laser** light is detected immediately before the formation of the high temp. state based on the **amplitude** of a reproduced signal.

The **laser** beam power level is determined for forming the **low- temp**. state and that for forming the high-temp. state based on the detected power level.

ADVANTAGE - Enables exact recording or recorded bit irrespective of variation in temp. Records each bit in stable and accurate manner.
Dwg.2/31

L35 ANSWER 14 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1996-326138 [33] WPIX
DNN N1996-274649
TI Optical recording medium for information recording and reproduction using **laser** beam - has third magnetic layer with vertical magnetisation film to which heat-insulating and heat-reflective layers are formed but by side non-contacting second magnetic layer with **lower** Curie **temp**..
DC T03 V02 W04
PA (CANO) CANON KK
CYC 1
PI JP 08147778 A 19960607 (199633)* 8p
ADT JP 08147778 A JP 1994-286233 19941121
PRAI JP 1994-286233 19941121
AB JP 08147778 A UPAB: 19960823
The recording medium has a substrate (11) layered with a first, second and third magnetic layers (13-15). The first magnetic layer includes a vertical magnetisation film with bigger magnetic domain than the third magnetic layer. Its non-magnetic domain is however smaller than that of the third magnetic layer.

The second magnetic layer has **lower** Curie **temp**. than the first and third magnetic layers. A heat insulating layer and a heat reflective layer (16) is provided on the side of the third magnetic layer which does not contact the second magnetic layer.

ADVANTAGE - Prevents redn. of reproduced signal **amplitude**. Enables to reproduce signals with period below diffraction threshold of light at high-speed. Improves recording and transfer speed.
Dwg.1/7

L35 ANSWER 15 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1996-326137 [33] WPIX
DNN N1996-274648
TI Optical recording medium for information recording and reproduction using **laser** beam - has third magnetic layer with vertical magnetisation film having recording tracks sepd. by slot tracks that correspond to recording tracks of first magnetic layer and magnetic target.
DC T03 V02 W04
PA (CANO) CANON KK
CYC 1
PI JP 08147777 A 19960607 (199633)* 9p
ADT JP 08147777 A JP 1994-280242 19941115
PRAI JP 1994-280242 19941115

AB JP 08147777 A UPAB: 19960823
The recording medium has a substrate (11) layered with a first, second and third magnetic layers (13-15). The first magnetic layer includes a vertical magnetisation film with bigger magnetic domain than the third magnetic layer. Its non-magnetic domain is however smaller than that of the third magnetic layer.

The second magnetic layer has **lower** Curie **temp.** than the first and third magnetic layers. The recording tracks of the first magnetic layer adjoin the recording tracks sepd. slot tracks of the third magnetic layer.

ADVANTAGE - Prevents redn. of reproduced signal **amplitude.** Enables to reproduce signals with period below diffraction threshold of light at high-speed. Improves recording and transfer speed. Provides recording medium with reduced size.
Dwg.1/13

L35 ANSWER 16 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1995-215380 [28] WPIX
DNN N1995-168863
TI Writing-reading head for information on magnetic carrier - has optical elements to direct **laser** radiation onto section of magnetic circuit facing carrier and form local reversible disturbance of magnetic conductivity in form of virtual gap.
DC T03 W04
IN ENILENIS, I; ENILENIS, R; ENILENIS, I S S; ENILENIS, R I S; ENILENIS, I S; ENILENIS, R I
PA (ENIL-I) ENILENIS R I; (ENIL-I) ENILENIS I; (ENIL-I) ENILENIS R I S; (ENIL-I) ENILENIS I S
CYC 24
PI WO 9515553 A1 19950608 (199528)* RU 19p
RW: AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE
W: AU CA CN JP KR US
AU 9475485 A 19950619 (199540)
EP 685837 A1 19951206 (199602) EN 10p
R: BE CH DE DK FR GB IT LI NL SE
RU 2051427 C1 19951227 (199640) 7p
JP 08511647 W 19961203 (199710) 16p
CN 1119048 A 19960320 (199743)
AU 9853940 A 19980409 (199827)
ADT WO 9515553 A1 WO 1994-RU194 19940818; AU 9475485 A AU 1994-75485 19940818; EP 685837 A1 EP 1994-925655 19940818, WO 1994-RU194 19940818; RU 2051427 C1 RU 1993-53850 19931130; JP 08511647 W WO 1994-RU194 19940818, JP 1995-515544 19940818; CN 1119048 A CN 1994-191438 19940818; AU 9853940 A Div ex AU 1994-75485 19940818, AU 1998-53940 19980213
FDT AU 9475485 A Based on WO 9515553; EP 685837 A1 Based on WO 9515553; JP 08511647 W Based on WO 9515553
PRAI RU 1993-53850 19931130
AB WO 9515553 A UPAB: 19950721
During recording, the coherent radiation (17) from a **laser** diode (7) passes through a transparent planar waveguide (8) and optical elements (9, 10, 11) ensure forming of a spot (13) on a section (5) of a magnetic circuit (2), made of a magnetic with a comparatively **low** Curie **temp.** point. An electric record signal is passed to a winding (4), forming a magnetic field with closed force lines concentrated in the magnetic circuit (2) and forming a local disturbance of the magnetic conductivity in the form of a virtual gap, to assist the force lines to reach the closest magnetic carrier (6).

Magnetic domains are formed in the carrier (6) and change of the recording format is carried out by scanning of the virtual gap across the magnetic circuit. During reading, the winding (4) is connected to an external reproduction signal **amplifier** and an induction EMF is

formed from the information field of a track of the carrier (6).
USE/ADVANTAGE - Professional and domestic audio video-recording and regeneration of video information. Better dynamic qualities of recording-reading process.
Dwg.1/4

L35 ANSWER 17 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1994-338154 [42] WPIX
DNN N1994-265751 DNC C1994-153849
TI Semiconductor crystal prodn. of bubble formation in solvent layer in heating process - involves growing crystal with pressure of gas surrounding seed crystal and crystal raw material higher than total steam pressure of solute-contg. solvent layer.
DC J04 L03 U11
PA (TOKE) TOSHIBA KK
CYC 1
PI JP 06263580 A 19940920 (199442)* 10p
ADT JP 06263580 A JP 1993-53758 19930315
PRAI JP 1993-53758 19930315
AB JP 06263580 A UPAB: 19941212
The process comprises: (a) linearly positioning a seed crystal, a solvent layer, and a crystal raw material in a container to form a growing sample with crystal raw material, the seed crystal, and the solvent layer positioned at the high **temp**. side, the **low temp**. side, and the temp. transition region, respectively; or locally heating the solvent layer; and (b) successively moving the temp. transition region or the local heating position to the crystal raw material side to grow the crystal. The crystal growth is done under the condition that the pressure of gas occupying the space in the container around the seed crystal and the space in the container around the crystal raw material is higher than total steam pressure of the solute-contg. solvent layer.
The mfg. equipment for semiconductor crystal prodn. comprises (a) means for heating the growing sample or a means for locally heating the solvent layer; (b) means for successively moving the temp. transition region or the local heating position; and (c) means for equalising the pressure of the space in the container around the seed crystal to the pressure of the space in the container around the raw material crystal.
USE/ADVANTAGE - The method and the equipment are used for producing a semiconductor crystal. The method and the equipment depress bubbles generated in the solvent layer in heating to grow the bulk single crystal of a cpd. semiconductor by solvent moving method or heat moving method, producing a light emitting diode, semiconductor **laser**, optical **amplifier**, or optical detector.
Dwg.1/8

L35 ANSWER 18 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1993-355274 [45] WPIX
DNN N1993-274248
TI Semiconductor **laser** drive circuit for stable light output waveform - increases and decreases outgoing light intensity modulation pulse **amplitude** at high-**low temps**.
NoAbstract.
DC U12 V08
PA (HITA) HITACHI LTD
CYC 1
PI JP 05259563 A 19931008 (199345)* 6p
ADT JP 05259563 A JP 1992-51293 19920310
PRAI JP 1992-51293 19920310
AB JP 05259563 A UPAB: 19931220
Dwg.1/6

L35 ANSWER 19 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1993-274648 [35] WPIX
DNN N1993-210911
TI Operating addressable monolithic semiconductor **laser** array - varying forward bias to light **amplifying** region to cause lasing so that **laser** temperature change is offset by that due to bias variation.
DC U12 V08
IN PAOLI, T L
PA (XERO) XEROX CORP
CYC 5
PI EP 558220 A1 19930901 (199335)* EN 15p
JP 05283809 A 19931029 (199348)
US 5267255 A 19931130 (199349) 15p
EP 558220 B1 19961113 (199650) EN 16p
R: DE FR GB
DE 69305885 E 19961219 (199705)
ADT EP 558220 A1 EP 1993-301099 19930216; JP 05283809 A JP 1993-29442 19930218; US 5267255 A US 1992-841399 19920225; EP 558220 B1 EP 1993-301099 19930216; DE 69305885 E DE 1993-605885 19930216, EP 1993-301099 19930216
FDT DE 69305885 E Based on EP 558220
PRAI US 1992-841399 19920225
AB EP 558220 A UPAB: 19931119
The method is for operating an array including light **amplifying** and modulator regions, pref. associated with at least one associated p-n junction. Sufficient forward bias is applied to the **amplifier** region so that stimulated emission occurs. A portion of this is directed into the modulator region.
The forward bias is varied so that the stimulated emission is allowed to cause lasing within the **laser**. The modulator region controls the output intensity by switching the internal loss of the **laser** from a high to a **low** value. Any **temperature** change of the **laser** is approximately offset by a temperature change due to bias variation.
ADVANTAGE - Eliminates modulation induced thermal crosstalk between independently addressable **lasers**.
Dwg.6/9

L35 ANSWER 20 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1993-163064 [20] WPIX
DNN N1993-125148
TI Operating circuit for **laser** diode keeping exciting ratio at **low temp**. - has APC controller generating control voltage for pulse current source to maintain LD power, and pulse current controller keeping constant **amplitude** of input data and controlling pulse current source NoAbstract.
DC U12 V08
PA (FUIT) FUJITSU LTD
CYC 1
PI JP 05095148 A 19930416 (199320)* 7p
ADT JP 05095148 A JP 1991-254860 19911002
PRAI JP 1991-254860 19911002

L35 ANSWER 21 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1993-028674 [04] WPIX
DNN N1993-021926 DNC C1993-012854
TI Active optical fibre preform - has external zone doped at edge to reduce softening temp. difference.
DC L03 P81 V07 V08

IN LE, SERGENT C
PA (ALCA-N) ALCATEL FIBRES OPTIQUES; (ALCA-N) ALCATEL FIBRES OPTIQUES SA; (COGE) ALCATEL ALSTHOM CIE GEN ELECTRICITE
CYC 10
PI EP 524591 A1 19930127 (199304)* FR 6p
R: CH DE FR GB IT LI NL SE
FR 2679548 A1 19930129 (199313) 10p
CA 2074569 A 19930126 (199315) FR
US 5364429 A 19941115 (199445) 4p
EP 524591 B1 19960515 (199624) FR 6p
R: CH DE FR GB IT LI NL SE
DE 69210702 E 19960620 (199630)
ADT EP 524591 A1 EP 1992-112419 19920721; FR 2679548 A1 FR 1991-9429 19910725; CA 2074569 A CA 1992-2074569 19920723; US 5364429 A US 1992-917382 19920723; EP 524591 B1 EP 1992-112419 19920721; DE 69210702 E DE 1992-610702 19920721, EP 1992-112419 19920721
FDT DE 69210702 E Based on EP 524591
PRAI FR 1991-9429 19910725
AB EP 524591 A UPAB: 19930924
An active optical fibre preform comprises an internal zone for forming the fibre core and an external zone for forming the fibre cladding and has a primary doping, for conferring a large refractive index difference between the core and cladding, and a secondary doping, for active species concn. at the centre of the core. The novelty is that the outer peripheral portion of the external zone is doped to reduce the difference between the softening temps. of the external and internal zones.

An active optical fibre mfg. process comprises drawing fibre from a preform prepd. by doping a peripheral external zone of a preform to confer a refractive index higher than that of the fibre cladding and a reduced softening temp. difference w.r.t. the fibre core.

USE/ADVANTAGE - The preform is used to mfr. (**laser** or **amplification**) active optical fibres. The doped peripheral portion has a refractive index maintained slight greater than that of the cladding, has a reduced softening temp. which allows preform and fibre prodn. at **lower temp**. to reduce diffusion phenomena, and reduces thermomechanical stresses by close matching of expansion coefficients and softening temps.

1/1

L35 ANSWER 22 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1992-106294 [14] WPIX
DNN N1992-079673 DNC C1992-049621
TI Functional quartz optical waveguide - where in core region contg. rare earth element or semiconductor as active species is formed by sol-gel process.
DC L03 P81 V07 V08
IN AIKAWA, H; HOSHINO, S; ISHIKAWA, S; ITO, M; KANAMORI, H
PA (SUME) SUMITOMO ELECTRIC IND CO; (SUME) SUMITOMO ELECTRIC CO
CYC 6
PI EP 477898 A 19920401 (199214)* 7p
R: DE FR GB IT
JP 04131805 A 19920506 (199225) 5p
US 5193137 A 19930309 (199312) 7p
EP 477898 A3 19930519 (199403)
EP 477898 B1 19950503 (199522) EN 7p
R: DE FR GB IT
DE 69109423 E 19950608 (199528)
ADT EP 477898 A EP 1991-116329 19910925; JP 04131805 A JP 1990-251881 19900925; US 5193137 A US 1991-765243 19910925; EP 477898 A3 EP 1991-116329 19910925; EP 477898 B1 EP 1991-116329 19910925; DE 69109423 E DE 1991-609423 19910925, EP 1991-116329 19910925

FDT DE 69109423 E Based on EP 477898
PRAI JP 1990-251881 19900925
AB EP 477898 A UPAB: 19931006
The waveguide (17) comrpises a support (11), a quartz glass core (15) formed thereon and a region (16) which surrounds the core and has a lower refractive index than that of the core. The core, and/or part of the region having lower refractive index through which light is guided, contain a functional material.
USE/ADVANTAGE - Provides a quartz optical waveguide which has a function, e.g. **laser amplification** or a nonlinear effect. The method of the invention enables the formation of a glass contg. a functional additive, which is unstable under the known flame-hydrolysis deposition (FHD) process, by employing an alternative **low-temp**.
2/3

L35 ANSWER 23 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1990-180665 [24] WPIX
CR 1985-136424 [23]; 1998-055534 [06]
DNN N1990-140402 DNC C1990-078396
TI Super-fluorescent broadband fibre **laser** source - includes a pumping light source, a doped fibre and a multiplexing coupler.
DC L03 P81 V07 V08
IN DIGONNET, M J F; FLING, J J; KIM, B Y; LIU, K; SHAW, H J
PA (STRD) UNIV LELAND STANFORD JUNIOR
CYC 8
PI EP 372907 A 19900613 (199024)* 32p
R: DE FR GB IT
US 4938556 A 19900703 (199029)
CA 2004716 A 19900607 (199034)
JP 03028830 A 19910207 (199112)
JP 07117669 B2 19951218 (199604) 27p
EP 372907 B1 19980617 (199828) EN
R: DE FR GB IT
DE 68928713 E 19980723 (199835)
CA 2004716 C 19990223 (199919)
KR 256435 B1 20000515 (200128)
ADT EP 372907 A EP 1989-312666 19891205; US 4938556 A US 1988-281088 19881207; JP 03028830 A JP 1989-320351 19891207; JP 07117669 B2 JP 1989-320351 19891207; EP 372907 B1 EP 1989-312666 19891205, Related to EP 1997-111612 19891205; DE 68928713 E DE 1989-628713 19891205, EP 1989-312666 19891205; CA 2004716 C CA 1989-2004716 19891206; KR 256435 B1 KR 1989-18257 19891207
FDT JP 07117669 B2 Based on JP 03028830; EP 372907 B1 Related to EP 817335; DE 68928713 E Based on EP 372907
PRAI US 1988-281088 19881207; US 1983-554888 19831125; US 1986-930136 19861112; US 1987-137870 19871222
AB EP 372907 A UPAB: 20010522
Fibre optic system comprises: pumping light source (100) emitting at a first wavelength spectrum, an optical fibre (108) doped with **laser** material which is pumped to induce superfluorescent **laser** emission at a second wavelength spectrum, the **laser** emission comprising two components which are contra-directional; and a coupler (104) for directing pump light into one end of the doped fibre, the coupler having a different efficiency for the first and second spectra of wavelength.
The coupler pref. provides full coupling for one spectrum and inhibits the other; or may provide 50% coupling for the second and inhibits the first.
USE/ADVANTAGE - As a light source for optical devices that emits light having low temporal dependence, high intensity, high optical coherence and **low temp**. dependence.

Dwg.3/20

L35 ANSWER 24 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1990-066867 [09] WPIX
DNN N1990-051375
TI Control of temp. uniformity of semiconductor wafer - ha adjustable current source connected to power supply and heating element to raise or **lower temp**. of element in response to controller.
DC U11 X25
IN MOSLEHI, M M
PA (TEXI) TEXAS INSTR INC
CYC 1
PI US 4891499 A 19900102 (199009)* 9p
ADT US 4891499 A US 1988-242404 19880909
PRAI US 1988-242404 19880909
AB US 4891499 A UPAB: 19930928
A silicon semiconductor wafer (26) is placed in a vacuum chamber (12) device side (28) facedown. **Laser** beams of equal power are directed at an edge point (72) and a centre point (74) of the wafer (26). The **laser** beams are reflected from the edge point (72) and the centre point (74) into two infrared photodetectors (40-42). A differential **amplifier** (44) evaluates the reflected **laser** beams for a power difference and signals a current source (82).

Current source (82) heats a quartz ring (46) which surrounds the wafer (26). The quartz ring (46) passes the heat to the wafer (26) until the **amplifier** (44) no longer senses a power difference, which is indicative of an equal wafer surface temperature.

USE/ADVANTAGE - Real time temperature control in single wafer rapid thermal processing. Eliminates radial wafer temperature gradients via closed-loop temperature uniformity monitoring and adjusting system.
1/3

L35 ANSWER 25 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1988-212998 [30] WPIX
DNN N1988-162383 DNC C1988-095087
TI Silver oxide catalyst for carbon di oxide **laser** - promotes **low temp** reformation of discharge-dissociated and minimises power loss.
DC E36 L03 V08
PA (MACK-I) MACKEN J A
CYC 1
PI US 4757512 A 19880712 (198830)* 10p
ADT US 4757512 A US 1987-16060 19870218
PRAI US 1987-16060 19870218
AB US 4757512 A UPAB: 19930923
A CO2 gas **laser** (10) in which electrical discharge causes decompsn. of CO2 into CO, O2 and energetic forms of oxygen (11, 14,15) is improved by coating an inside surface with Ag2O3 to catalyse the reformation of CO2 (17). The Ag2O3 or other endothermic silver oxide is made porous to increase activity but is adherent and coats at least part of the wall area facing the **amplification** volume. The CO2 gas mixt. pref. flows rapidly through the **amplification** vol. and a large surface area of silver oxide catalyst is placed close to the exhaust end to encounter a substantial amt. of energetic oxygen.

The silver oxide may form a coating on metallic silver particles which are insulated from one another. The oxide catalyst and electrode may be different and the catalyst may function independently as part of the **laser** resonant reflector. Also claimed is a method for converting CO and O2 into CO2 at less deg.C as described above in which at least one energetic form of oxygen is involved, which may be produced by discharge, radiation or bombardment. Further claimed is the formation of the catalyst

by reversible oxidn. and reoxidn. of silver.
USE/ADVANTAGE - The electric discharge in CO2 **lasers** has the adverse side effect of CO2 decompsn. with consequent power loss. The silver oxide catalyst above reforms CO2 at **low temps**. without destabilising the discharge and without the need for recirculation. The catalyst may also have non-**laser** uses.
4/4

L35 ANSWER 26 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1988-205245 [29] WPIX
DNN N1988-156656 DNC C1988-091609
TI Discharge driven gold catalyst for carbon di oxide **laser** - has gold distributed on walls of discharge volume and divided to form electrically isolated islands.
DC E36 L03 V08
IN MACKEN, J A
PA (MACK-I) MACKEN J A
CYC 7
PI US 4756000 A 19880705 (198829)* 9p
DE 3805080 A 19880901 (198836)
FR 2611093 A 19880819 (198840)
GB 2203281 A 19881012 (198841)
GB 2203281 B 19910724 (199130)
CA 1294694 C 19920121 (199210)
IT 1219867 B 19900524 (199213)
IL 85578 A 19920216 (199220)
DE 3805080 C2 19960307 (199614) 12p
ADT US 4756000 A US 1987-16061 19870218; DE 3805080 A DE 1988-3805080 19880218; FR 2611093 A FR 1988-1718 19880212; GB 2203281 A GB 1988-3634 19880217; IL 85578 A IL 1988-85578 19880229; DE 3805080 C2 DE 1988-3805080 19880218
PRAI US 1987-16061 19870218
AB US 4756000 A UPAB: 19930923
The CO (2) **laser** device includes a closed envelope containing a CO (2) **laser** gas mixture and **laser** **amplification** volume. The **amplification** volume includes an electrical discharge through the CO (2) **laser** gas mixture, the discharge causing decomposition of CO (2) in the mixture to form carbon monoxide, oxygen, and energetic forms of oxygen.
There is at least one surface coated with gold inside the envelope. The gold surface is positioned and configured to promote contact with both the carbon monoxide and the energetic forms of oxygen generated in the **amplification** volume for purposes of catalising formation of CO (2).
Also claimed is a method for converting CO and O2 to CO2.
ADVANTAGE - System operates at a **low temp**. and additional heating of the gas is not required.
4/4

L35 ANSWER 27 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1986-213617 [33] WPIX
DNN N1986-159506
TI Detecting strain sensitive features in crystal samples - applying ultrasound directly to sample irradiated by **laser** beam having spot size less than ultrasound wavelength.
DC S02 S03
IN HUSTON, A L; MOERNER, W E
PA (IBMC) IBM CORP; (IBMC) INT BUSINESS MACHINES CORP
CYC 6
PI EP 190877 A 19860813 (198633)* EN 6p
R: DE FR GB IT

US 4614116 A 19860930 (198642)
CA 1227661 A 19871006 (198744)
EP 190877 B1 19930414 (199315) EN 8p
R: DE FR GB IT
DE 3688257 G 19930519 (199321)
ADT EP 190877 A EP 1986-300607 19860129; US 4614116 A US 1985-697674 19850204;
EP 190877 B1 EP 1986-300607 19860129; DE 3688257 G DE 1986-3688257
19860129, EP 1986-300607 19860129
FDT DE 3688257 G Based on EP 190877
PRAI US 1985-697674 19850204
AB EP 190877 A UPAB: 19930922
A tunable **laser** light source (11) has its output beam impinging a strain-sensitive spectral feature. This may be a spectral hole or a narrow absorption line of colour centres, ions, or molecules in crystals or polymers at **low temperatures**. A well-defined ultrasonic field, of frequency above 1 MHz, is generated in the region of the sample by a piezoelectric transducer (14) bonded to it.

When a spectral hole or other strain-sensitive feature is present in the sample, the ultrasonic wave, from the transducer, shifts, splits, or broadens the absorption line shapes of the various centres in the sample thus changing the shape or wavelengths of the feature. The modulated light beam or a beam of fluorescence emerging from the sample (12) is detected by a high speed detector (24) such as a photodiode or photomultiplier.
1/2

L35 ANSWER 28 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1984-097967 [16] WPIX
TI Semiconductor **laser** output stabilising circuit - minimises error signal component AC **amplitude** at **lowest temp**
. within allowable working temp. range NoAbstract Dwg 5/6.
DC U12 V08 W02
PA (TOKE) TOKYO SHIBAURA DENKI KK
CYC 1
PI JP 59043586 A 19840310 (198416)* 5p
ADT JP 59043586 A JP 1982-152560 19820903
PRAI JP 1982-152560 19820903

L35 ANSWER 29 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1983-822090 [47] WPIX
DNN N1983-208150
TI Semiconductor **laser** cooling device - has refrigerating module controlled by current through **laser** used as single temp. sensor.
DC U12 V04 V08
IN ALLIAS, B
PA (CITC) CIT-ALCATEL
CYC 7
PI EP 93942 A 19831116 (198347)* FR 9p
R: BE DE FR GB IT LU NL
FR 2526237 A 19831104 (198349)
EP 93942 B 19861120 (198647) FR
R: BE DE FR GB IT LU NL
DE 3367828 G 19870108 (198702)
ADT EP 93942 A EP 1983-104063 19830426
PRAI FR 1982-7505 19820430
AB EP 93942 A UPAB: 19930925
The **laser** diode (1) is supplied from a source (20) of current above threshold level, modulated by a data transmission modulator (M) and measured by the voltage drop across a series resistance (12) between the input terminals of a differential **amplifier** (13). The output drives a Peltier effect module (10) in which the desired heat-pumping is

obtd. by choice of the gain (G) of the differential **amplifier**.
The temp. indication is more reliable than that of a conventional thermistor. Current consumption is reduced by elimination of a conventional temp. regulation loop **amplifier**. The Peltier module will operate with only a limited difference between hot and **cold** face **temp**., and hence reduced mechanical stresses. Alternatively the **laser** current itself may drive a Peltier module with a selected number of semiconductor couples.
2/3

L35 ANSWER 30 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1982-H0138E [24] WPIX
TI Wideband modulated optical link transmission system - has direct optical modulation and **low**-frequency **temp**.-compensating filters within transmitter and receiver.
DC W02
IN EUMURIAN, G
PA (CSFC) THOMSON CSF
CYC 12
PI EP 53545 A 19820609 (198224)* FR 25p
R: AT BE CH DE GB IT LI NL SE
FR 2495412 A 19820604 (198229)
JP 57119531 A 19820726 (198235)
US 4443890 A 19840417 (198418)
EP 53545 B 19840801 (198431) FR
R: AT BE CH DE GB IT LI NL SE
DE 3165277 G 19840906 (198437)
ADT EP 53545 A EP 1981-401842 19811120; US 4443890 A US 1981-326203 19811201
PRAI FR 1980-25560 19801202
AB EP 53545 A UPAB: 19930915
The system uses a **laser** diode or LED (1) which is **amplitude**-modulated by the input signal (E) via a buffer **amplifier** (10), high-pass filter (8) and **amplifier** (2).
This filter corrects for nonlinear thermal effects of the diode (1). The modulated light wave is guided by an optical fibre (3) to an avalanche photodiode (40) whose output is applied to a chain of buffer **amplifiers** (5,11,12,15) sepd. by low-pass filters (6,7,9).
These filters correct for the nonlinear and linear thermal effects of the transmitter diode (1) and linear thermal effects of the avalanche photodiode (40), in that order. Alternatively, the receiver may be based on a PIN photodiode insensitive to temp., and the final low-pass filter (9) and buffer **amplifier** (15) omitted.
13

L35 ANSWER 31 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1982-D1954E [12] WPIX
TI Sealed circulating gas **laser** - has fan contg. fan rotor blades coated with catalyst system catalytically active at **low** **temps**..
DC V08
IN CROSS, P H; STARK, D S
PA (MINA) UK SEC FOR DEFENCE
CYC 1
PI GB 2083687 A 19820324 (198212)* 7p
GB 2083687 B 19840201 (198405)
ADT GB 2083687 A GB 1981-25095 19810817
PRAI GB 1980-27281 19800821; GB 1981-25095 19810817
AB GB 2083687 A UPAB: 19930915
The circulating-gas **laser** includes a circulation system having a gas propelling (34) for propelling lasing gas into and lasing gas products out of the lasing system, and a cooling system for cooling the lasing gas

products. The gas propelling device includes at least one propelling surface having on it a catalyst system containing a catalyst which promotes formation of lasing gas from lasing gas products, e.g. the recombination of CO and O2 into CO2.

The propelling device may comprise a fan having fan blades (35) coated with a catalyst system (42) which is catalytically active at **low temperatures**, for example SnO2-supported catalyst. Providing the catalyst in this form rather than, for example, in a conventional honeycomb structure lying across the gas flow minimises the impedance to gas flow whilst maximising contact between catalyst and lasing gas products.

1

L35 ANSWER 32 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1978-03817A [02] WPIX
TI High power lead tin telluride diode **laser** - formed by **low temp**. cadmium diffusion and tunable over 6.5 to 32 microns.
DC L03 U12
PA (GENK) GENERAL MOTORS CORP
CYC 1
PI US 4064621 A 19771227 (197802)*
PRAI US 1976-723803 19760916
AB US 4064621 A UPAB: 19930901
A high power PbSnTe infrared **laser** is made by **low-temp**. Cd diffusion into a body of low dislocation density monocrystalline p-type Pb1-xSnxTe, x=0-30 mol.%, selected to provide a band gap corresp. to a photon of infra-red radiation of predetermined wavelength within 6.5-32 mu.

Diffusion is by (a) placing the body in a chamber with 0.05-0.08 mgCd/cm3 chamber vol., (b) closing and evacuating to 1x10-6 torr, (c) heating at 50-500 degrees C/hr. to 350-500 degrees C, (d) maintaining for a predetermined time up to 2 hr. to diffuse Cd into a surface and form a planar high injection efficiency pn-junction parallel to and at a predetermined depth below the surface, (e) cooling at 50-500 degrees C/hr. to 150 degrees C in the chamber and (f) cooling to room temp.

The **laser** is fabricated by (g) contouring and polishing the body into predetermined form with a **laser** cavity adjacent the junction for collecting and **amplifying laser** radiation of the predetermined wavelength, (h) applying ohmic contacts for applying a voltage across the junction to generate the i.r. wavelength and (i) placing in intimate contact with a heat sink for cooling.

The **laser** can operate at high power (1mW) at any selected wavelength within 6.5-32 mu, including 6.5-9 mu useful for spectroscopy and previously not attainable at high power for PbSnTe **lasers**.

L35 ANSWER 33 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1976-71995X [38] WPIX
TI Implanting dopant into intrinsic semiconductors - using electric arc to form devices having long minority charge carrier lifetime.
DC L03 U11 U12
PA (USSA) US SEC OF ARMY
CYC 1
PI US 3979272 A 19760907 (197638)*
PRAI US 1974-489872 19740718
AB US 3979272 A UPAB: 19930901
A material is implanted into the surface of an intrinsic semiconductor to form a region of charge carriers of one conductivity type by (a) establishing a potential difference between the material to be implanted and the substrate (b) heating the substrate with an electrical heating filament beneath the substrate, (c) moving the material close to the

substrate to draw a single continuous arc between them, vaporising the material and etching a region of the substrate surface and (d) maintaining the arc for long enough to deposit vapourised material in the etched region, thus forming a semiconductor junction between the semiconductor substrate and the region of charge carriers. Devices having long lifetime minority charge carriers are fabricated at relatively **low temps**. e.g. minority lifetime of 60-100 mu s after implantation, 250 mu s initially. Alternate p and n regions may be formed, and using a protective mask, edge to edge spacing of adjacent regions may be <1 mm. A specific use is fabrication of a electronic phase shifter, effecting controllable phase shifts in an adjacent waveguide. Other uses include **laser amplitude** modulators, solar cells, photoconductive devices and semiconductor transit time generators in Si, GaAs and InP.

L35 ANSWER 34 OF 66 WPIX (C) 2003 THOMSON DERWENT
AN 1975-N6797W [52] WPIX
TI Digital pyrometer - has **amplifier** and source of radiation coupled to a photomultiplier.
DC S03
PA (LEON-I) LEONTEV K L
CYC 1
PI SU 463005 A 19750605 (197552)*
PRAI SU 1972-1765212 19720330
AB SU 463005 A UPAB: 19930831
To improve the linearity of the temp. scale and increase the sensitivity of the device in the region of **low temps**. in the proposed pyrometer, the beam of radiation emitted by a hot sample is focussed onto a photomultiplier (2). A condenser (3) is connected to the output of the photomultiplier, so that after being charged, it transmits the potential to an **amplifier** (6). The output potential of the latter serves to generate the radiation of a source (7), represented for example, by a **laser** diode.

L35 ANSWER 35 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 2002-131585 JAPIO
TI SEMICONDUCTOR **LASER** MODULE AND RAMAN **AMPLIFIER** USING THE MODULE
IN IRIE YUICHIRO; MIYOKAWA JUN; AIKIYO TAKESHI
PA FURUKAWA ELECTRIC CO LTD:THE
PI JP 2002131585 A 20020509 Heisei
AI JP 2000-321378 (JP2000321378 Heisei) 20001020
PRAI JP 2000-321378 20001020
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2002
AB PROBLEM TO BE SOLVED: To provide a semiconductor **laser** module which provides a high level output regardless of the variation in the operating environmental **temperature**, has **low** noise, provides a good stability in the wavelength and has good reliability. SOLUTION: A thermomodule 25 is mounted on a bottom plate 26 of a package 27. A base 2 is mounted on the thermomodule 25. The base 2 is mounted/ with a **laser** diode 1, a first optical fiber 4 which feedbacks **laser** light beams emitted from one end 31 of the diode 1 top the diode 1 and fixing means 6 and 7 which support the fiber 4 at its two longitudinal direction points. A second optical fiber 13 is provided on the other end 30 side of the diode 1 to receive and transmit the **laser** beams. An axis line section 33 which connects a **laser** light beams emitting surface 1 of the end 31 of the diode 1 and a **laser** light beam receiving end 32 of the fiber 4 is provided to the end side rather than a **laser** optical axis direction center (c of Figure 1) section of the thermomodule 25. COPYRIGHT: (C)2002,JPO

L35 ANSWER 36 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 2001-024261 JAPIO
TI WAVELENGTH VARIABLE GAIN EQUALIZER AND OPTICAL **AMPLIFIER** USING SAME
IN KENMOTSU NAOTO; SAKAI TETSUYA; KAJIMA TAKAFUMI
PA FUJIKURA LTD
PI JP 2001024261 A 20010126 Heisei
AI JP 1999-190744 (JP11190744 Heisei) 19990705
PRAI JP 1999-190744 19990705
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2001
AB PROBLEM TO BE SOLVED: To obtain gain invariably constant in flatness even if an input signal light varies in power.
SOLUTION: The input signal is inputted to an optical fiber **amplifier** (EDFA) 2 through an input monitoring coupler 1 and **amplified** with the gain corresponding to the intensity of an exciting light supplied from an exciting **laser** light source 3. An optical detector 8 monitors part of the power of the output signal light **amplified** by the EDFA 2, and an output constant control part 9 performs feedback control over the exciting **laser** light source 3 to obtain constant output power. The power of the input signal light monitored by an optical detector 6. A **temperature** control 7 **lowers** the **temperature** of a heater of a wavelength variable gain equalizer 4 when the input signal power becomes small and raises the temperature of the heater when large. Consequently, the gain flatness of the output signal light becomes constant irrelevantly to the input power.
COPYRIGHT: (C)2001,JPO

L35 ANSWER 37 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1997-246638 JAPIO
TI MODE SYNCHRONOUS FIBER **LASER** OPERATION STABILIZING METHOD
IN TAKARA HIDEHIKO; KAWANISHI SATOKI; SARUWATARI MASATOSHI
PA NIPPON TELEGR & TELEPH CORP <NTT>
PI JP 09246638 A 19970919 Heisei
AI JP 1996-44925 (JP08044925 Heisei) 19960301
PRAI JP 1996-44925 19960301
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1997
AB PROBLEM TO BE SOLVED: To realize a highly reliable **laser** operation by controlling temperature changing means so that an electric signal processing circuit can keep the temperature of a light **amplifier** constant.
SOLUTION: A temperature detector 108 for detecting the temperature of a light **amplifier** 103, temperature changing means 109 for changing the temperature of the light **amplifier** 104 and an electric signal processing circuit 109 for changing the temperature changing means 109 based on the detection result of the temperature detector 108 are provided. The temperature of a rare earth metal added fiber is detected by the temperature detector 108 and inputted into the electric signal processing circuit 110. The electric signal processing circuit 110 outputs a temperature changing means driving signal and controls the temperature changing means 109 such that the detected **temperature**, if higher (**lower**) than a reference temperature, is reduced (increased). The procedure is repeated to thereby maintain the temperature of the rare earth added fiber to the reference temperature. A change in the length of a **laser** resonator is prevented by controlling the temperature of the light **amplifier** which is the principal factor of the **laser** resonator length change. Thus, the realization of the stabilization of a **laser** operation is intended.
COPYRIGHT: (C)1997,JPO

L35 ANSWER 38 OF 66 JAPIO COPYRIGHT 2003 JPO

AN 1997-092923 JAPIO
TI **LASER** MODULE TEMPERATURE CONTROL CIRCUIT
IN SAKAMOTO HIROTOKU; FUJIWARA MASAAKI
PA JAPAN RADIO CO LTD
PI JP 09092923 A 19970404 Heisei
AI JP 1995-271753 (JP07271753 Heisei) 19950926
PRAI JP 1995-271753 19950926
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1997
AB PROBLEM TO BE SOLVED: To obtain a **laser** module temperature control circuit of a simple constitution based on voltage control wherein the overheating of a Peltier element caused by an excess current at the starting of power supply, and the breakdown caused by **low temperature** solder fusing are excluded, by controlling the Peltier element when a unipolar power supply and a low voltage. SOLUTION: When the internal temperature of a **laser** module 2 rises, the resistance value of a thermistor 22 decreases, because the thermistor 22 has a negative temperature coefficient, so that the + input terminal voltage of an operational **amplifier** (2) 12 decreases. The output voltage of the operational **amplifier** (2) 12 decreases, and the + terminal voltage of a Peltier element 21 decreases, and the temperature of the Peltier element 21 decreases. As the result of cooling operation, the temperature decreases, the thermistor resistance value increases, and the + input terminal voltage of the operational **amplifier** (2) 12 increases. Thereby the + terminal voltage of the Peltier element 21 is increased, and the temperature of a **laser** module 2 is kept constant, so that the Pelitier element breakdown caused by an excess current can be prevented and a circuit can be simplified. COPYRIGHT: (C)1997,JPO

L35 ANSWER 39 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1997-035358 JAPIO
TI WRITE TESTING METHOD AND OPTICAL INFORMATION RECORDING AND REPRODUCING DEVICE
IN KIMURA SHUNPEI
PA CANON INC
PI JP 09035358 A 19970207 Heisei
AI JP 1995-182614 (JP07182614 Heisei) 19950719
PRAI JP 1995-182614 19950719
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1997
AB PROBLEM TO BE SOLVED: To obtain a device capable of sufficiently coping with the speeding up and the contriving of the high density of an information recording by correctly recording recording bits, regardless of the variation of recording powers. SOLUTION: A prescribed signal is recorded by changing recording powers on a magneto-optical disk 1 and the power level PH<SB>th</SB> immediately before the high temp. level state of the disk 1 starts is detected, based on reproducing signal **amplitudes** detected in an **amplitude** detecting circuit 17 by reproducing the disk 1. Next, the value of a power level PL forming a **low temp.** level state is determined by a CPU 18 from the obtained PH<SB>th</SB>. Then, signals having different lengths are recorded on the disk 1 by changing recording powers. Next, the difference between intermediate values of peak values and the bottom values of reproducing signals having different lengths is detected by an asynmmetrical circuit 19 and a power level which forms a high temp. state in the disk 1 is determined by the CPU 18. Then, a signal is recorded by changing recording powers and the signal detected in a differentiation circuit 21 and a differential signal **amplitude** detecting circuit 22 is also outputted to the CPU 18 to be used for adjusting multi-valued power levels of a **laser** 5. COPYRIGHT: (C)1997,JPO

L35 ANSWER 40 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1995-021614 JAPIO
TI ERASING METHOD FOR MAGNETO-OPTICAL RECORDING
IN KIRINO FUMIYOSHI; TODA TAKESHI; IDE HIROSHI; TSUCHINAGA HIROYUKI; MAEDA TAKESHI; KUGIYA FUMIO
PA HITACHI LTD
PI JP 07021614 A 19950124 Heisei
AI JP 1993-167724 (JP05167724 Heisei) 19930707
PRAI JP 1993-167724 19930707
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1995
AB PURPOSE: To **lower** the maximum **temp**. of a recording film and to realize a high- density optical recording by increasing the wavelength of light or deviating a focus or reducing an aperture ratio of a lens at the time of erasing recorded information.
CONSTITUTION: A optical head 102 converges the light of a **laser** 108 to a medium 101. The input information is outputted from the **laser** 108 through a recording generator 105 and an APC 106 at the time of recording. The reflected light from the medium 101 is outputted through a photodetector 109 and an **amplifier** 110 to a waveform equalizer 111 and an input switch 112 at the time of reproducing the information. Output pulses are introduced to a discriminator 115 and a PLL 114 and the information is outputted from a decoder 117. A comparing discriminator 116 outputs the information of a trial writer 103 to a coder 104 and an input switch 112 switches the output of the **amplifier** 110 to a waveform shaper 113. The information from the coder 104 and the diacriminator 115 is compared and a trial writing end signal is emitted when the difference decreases to a permissible range. The change in the fluctuation in the sensitivity of the disk, etc., with the lapse of time according to the repetition of recording/erasing is suppressed by this constitution. The control of the shapes of the recording magnetic domains with high accuracy is thus made possible.

L35 ANSWER 41 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1994-140323 JAPIO
TI METHOD OF CRYSTALLIZING SEMICONDUCTOR FILM
IN ONAKA EIICHI
PA CASIO COMPUT CO LTD
PI JP 06140323 A 19940520 Heisei
AI JP 1992-307957 (JP04307957 Heisei) 19921023
PRAI JP 1992-307957 19921023
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1994
AB PURPOSE: To enlarge the grain size of polysiscon film.
CONSTITUTION: An amorphous film 13 is inadiated with excimer **laser** through a diffractive optical element 14. The diffractive optical element 14 is equipped with two parallel slits 14a. The excimer **laser**, when passing through a slit 14a, changes into a coaxial circular wave (diffractive wave). In this case, the coaxial waves from the two slits (light sources) 14a interfere with each other, and the maximum value of the **amplitude** occurs periodically on the surface of the amorphous silicon film 13. Therefore, the temperature distribution of the amorphous silicon film 13 within the irradiation range of a **laser** diffracted light becomes one which has high-temperature range and a **low temperature** range. As a result, the growth speed of crystals from the nuclei of crystals existing in high-temperature range becomes larger than the growth speed of the crystals from the nuclei of crystals existing in the **low temperature** range, and the crystal grains having grown from the high-temperature range widens to the **low-temperature** range, and the grain size becomes large.

L35 ANSWER 42 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1993-095148 JAPIO
TI DRIVER FOR **LASER** DIODE
IN FUSE YUKIHARU; SHIMIZU KAZUYOSHI
PA FUJITSU LTD
PI JP 05095148 A 19930416 Heisei
AI JP 1991-254860 (JP03254860 Heisei) 19911002
PRAI JP 1991-254860 19911002
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1993
AB PURPOSE: To provide an LD driver in which a circuit scale can be reduced without deteriorating an extinction ratio even at a **low temperature**.
CONSTITUTION: A current is varied in response to H or L level of input transmission data, and a pulse current is supplied to an LD 7. A pulse current supply source 25 having a resistor 21 and a transistor 20 connected in series, and the LD 7 are connected in series between power source terminals 30a and 30b. An APC controller 22 for generating a control voltage for so controlling the current of the source 25 as to maintain the light emitting power of the LD 7 constant is provided. A pulse current controller 19 applied by the voltage from the controller 22 for holding the **amplitude** of input transmission data at a predetermined value and controlling the pulse current to be supplied from the source 25 is provided.
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L35 ANSWER 43 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1993-029695 JAPIO
TI **LASER** APPARATUS
IN SUZUKI KAZUO
PA NIPPON STEEL CORP
PI JP 05029695 A 19930205 Heisei
AI JP 1991-205671 (JP03205671 Heisei) 19910723
PRAI JP 1991-205671 19910723
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1993
AB PURPOSE: To obtain a semiconductor **laser**-excited **laser** having a stable optical output by **lowering** a **temperature** of a heat sink by a temperature corresponding to a product of power consumption change of a light irradiating point due to a variation in a driving current of the semiconductor **laser** owing to a negative feedback of an optical output of the **laser** and a thermal resistance between the heat sinks.
CONSTITUTION: Part of a **laser** output light is guided to a photodetector 29, and further fed back to a semiconductor **laser**. Then, a temperature change ΔTH = a junction voltage VL×a driving current change ΔIL× thermal resistance RTH of a heat sink is calculated by a calculator 37. Further, the ΔTH is subtracted from a temperature set value 38 of the heat sink by a differential **amplifier** 39, and a set value 42 of new temperature is obtained. The heat sink temperature of the semiconductor **laser** is obtained from the output of a temperature sensor 22 through an **amplifier** 40. A difference between the output value 43 of the **amplifier** 40 and the set value 42 is obtained by a differential **amplifier** 41, and its output is fed back to the heat sink temperature of the semiconductor **laser** by a thermoelectric cooling element.
COPYRIGHT: (C)1993,JPO&Japio

L35 ANSWER 44 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1993-020720 JAPIO
TI MAGNETO-OPTICAL RECORDING SYSTEM

IN KOBAYASHI TADASHI
PA CANON INC
PI JP 05020720 A 19930129 Heisei
AI JP 1991-175159 (JP03175159 Heisei) 19910716
PRAI JP 1991-175159 19910716
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1993
AB PURPOSE: To miniaturize an optical system and to reduce a cost by having a 1st magnetic layer which has a low coercive force at room temp. and a high Curie temp. and a 2nd magnetic layer which has the coercive force higher than the coercive force of the above-mentioned layer and has a **low** Curie **temp**.
CONSTITUTION: A **laser** beam A with which the magnetic field impressed position of a coil 1 is irradiated is reflected from a recording medium 2 and is made incident on photodiodes 6, 7 via a half prism 4 and a polarization beam splitter 5. The outputs of photodiodes 6, 7 are inputted to a differential **amplifier** 8 and are differentially **amplified**, by which reproduced signals are taken out. The reproduced signals are compared with recording information in a comparator 10. A series of the recording information are rerecorded on the same position or different positions on the recording medium if these signals do not coincide with the recording information The rerecording is not executed if the reproduced signals coincide with the recording information. The reproduced signals become abnormal if the execution of the correct recording is failed by the defect, deterioration, corrosion, etc., of the recording medium and, therefore, the checking of the recording is possible.

L35 ANSWER 45 OF 66 JAPIO
AN 1992-326486 JAPIO
TI BAR CODE READER
IN MOCHIZUKI HIROKI; SATO SHOICHI
PA TOKYO ELECTRIC CO LTD
PI JP 04326486 A 19921116 Heisei
AI JP 1991-97339 (JP03097339 Heisei) 19910426
PRAI JP 1991-97339 19910426
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1992
AB PURPOSE: To control the light output of a semiconductor **laser** diode at constant by an automatic power control function in a state where the peripheral temperature of the semiconductor **laser** diode is relatively low and rapidly and automatically control the gain of an **amplifier** with an automatic gain control function in accordance with the deterioration of the light output of the semiconductor **laser** diode in the state where peripheral temperature becomes high.
CONSTITUTION: This reader is provided with a **laser** diode drive circuit 52 providing the semiconductor **laser** diode and the diode for monitoring and having the automatic power control function which controls the current of the semiconductor **laser** diode in accordance with light detection by the diode for monitoring in the state where the peripheral **temperature** is relatively **low** and with a control voltage generating circuit 62 generating a control voltage for controlling the gain of the AGC **amplifier** 58 in accordance with a monitoring output voltage level from the diode for monitoring in the **laser** diode driving circuit 52.

L35 ANSWER 46 OF 66 JAPIO
AN 1992-204672 JAPIO
TI IMAGE FORMING DEVICE
IN ITSUKIDA MASAMI

PA TOSHIBA CORP
PI JP 04204672 A 19920727 Heisei
AI JP 1990-334288 (JP02334288 Heisei) 19901130
PRAI JP 1990-334288 19901130
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1992
AB PURPOSE: To control the intensity of **laser** beams from a **laser** generating source constant by sending a control signal corresponding to the intensity of the **laser** beams, based on the detected result of the intensity detecting means of the **laser** beams.
CONSTITUTION: The sampling signal of the same timing as that of a first **laser** forcibly lighting signal are outputted from a control part 11 to a sample holding part 16, and in this time, the sample holding part 16 carries out the sampling of an output signal. When a temp. is 50°C, the output signal of a comparing and **amplifying** part 14 is changed in a direction where the current of a semiconductor **laser** 1 is increased, and **amplified** by a first current **amplifying** part 17, and a first **laser** switching part 18 increases the current of the semiconductor **laser** 1. Conversely, when the **temp**. is **low**, a feedback system composed of a light quantity detecting part 15, the comparative **amplifying** part 14, a first reference light quantity setting part 13, the sample and hold part 16, the first current **amplifying** part 17, and the first **laser** switching part 18, is operated in the direction where the above-mentioned current is decreased, and the semiconductor **laser** 1 keeps the light quantity equivalent to the voltage set to the first light quantity setting part 13.

L35 ANSWER 47 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1992-134228 JAPIO
TI DISTRIBUTION TYPE OPTICAL FIBER SENSOR AND SIGNAL TREATING METHOD
IN IGAWA KOJI
PA ASAHI GLASS CO LTD
PI JP 04134228 A 19920508 Heisei
AI JP 1990-255300 (JP02255300 Heisei) 19900927
PRAI JP 1990-255300 19900927
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1992
AB PURPOSE: To improve the measuring distance and the temperature resolution of temperature distribution in a **low** or high **temperature** region by making the control of AOM used for an optical directional coupler and the sensitivity setting, synchronized with the control, of a detector, and effectively assigning a dynamic range of a device to a to-be-measured object.
CONSTITUTION: A device is composed of a semiconductor **laser** generation part 1, acoustooptic modulator (hereinafter abbreviated to AOM) 2, to-be-measured optical fiber 3, spectroscope 4, detectors 5 and 6 using photoelectric converters, **amplifiers** 7 and 8, digital signal treatment part 9, computer 10, timing generator 11, and to-be- measured object 12. The timing generator 11 outputs the control signal of the AOM 2 besides a **laser** pulse trigger signal. The rise of the control signal and a trigger signal have a time difference corresponding to a distance to a boundary point. This guids Raman scattering light after the boundary point to the detectors gain-set conforming to the level. That is, a lower gain is set in a high temperature region and a higher gain is set in the measurement of a **low temperature** region, and the AOM is controlled so as to avoid the measurement of the boundary point. Thus temperature distribution can be measured over the overall length of an optical fiber.

L35 ANSWER 48 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1991-176645 JAPIO
TI COMPONENT MEASURING INSTRUMENT OF FOOD
IN YONEDA KENICHI
PA MITSUBISHI HEAVY IND LTD
PI JP 03176645 A 19910731 Heisei
AI JP 1989-317168 (JP01317168 Heisei) 19891206
PRAI JP 1989-317168 19891206
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1991
AB PURPOSE: To rapidly measure the concn. of food components in which water is the essential component by generating a **laser** beam of a near IR region from a **laser** diode and controlling the wavelength of the **laser** beam by a temp. controller.
CONSTITUTION: The output of the **laser** diode 1 is stabilized by a power source 2 and the **laser** (wavelength of about <=4nm half-**amplitude** level) 3 is irradiated to, for example, melon 5. The **laser** 3 transmits the inside of the melon 5, is partly reflected to a bored mirror 4, is condensed 7 and is cast to a photodetector 8. After the photoelectric conversion is generated by the photodetector 8, **amplification** 9 is generated. PbS, Ge, etc., are selected for the photodetector 8 by the wavelength of the light 3. The photodetector 8 is kept at the specified **low temp**. by an internal temp. controller 10. Further, an internally cooled substrate 11 is kept at a **low temp**. by a cooler 12 placed on the outside, by which the temps. of the diode 1 and the photodetector 8 are kept at the additionally **low temps**. Consequently, the saccharinity degree of the melon 5 is exactly measured (about <= 0.2 saccharinity degree error) in a short period of time (within about 0.1 second).
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L35 ANSWER 49 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1991-143126 JAPIO
TI OPTICAL TRANSMITTER
IN MOTOJIMA KUNIAKI; SHIYUUJI MIONORI; KITAYAMA TADAYOSHI
PA MITSUBISHI ELECTRIC CORP
PI JP 03143126 A 19910618 Heisei
AI JP 1989-282329 (JP01282329 Heisei) 19891030
PRAI JP 1989-282329 19891030
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1991
AB PURPOSE: To obtain an excellent APC characteristic independently of the P-I characteristic and the temperature range of a light emitting element by providing a variable resistance element in parallel with a light emitting element of a **laser** diode or in parallel therewith via a resistor, bringing the resistance to a high resistance at a high temperature and to a low resistance at a **low temperature**.
CONSTITUTION: A variable resistance element 9 is connected in parallel with a light emitting element LD 3 and its resistance varies with a control signal. A temperature sensor 10 outputs a control signal to bring a resistance of the variable resistance element 9 to a high resistance at a high temperature and to a low resistance at a **low temperature** to the variable resistance element 9. A resistance of 300ohms is obtained at the low resistance state and a resistance of 10kohms is obtained at the high resistance state in the variable resistance element 9 by employing a FET 11 and using its drain and source at terminals as the resistive element and using its gate as a variable control terminal. The temperature sensor 10 consists of a circuit network comprising of a resistor 12, a thermister 13 and a power supply 14. An output current of a current **amplifier** 6 is divided to an LD 3 and the variable resistance element 9 at each temperature and the output current is increased more than the case of connection of an LD single body

and a current **amplification** factor β is increased sufficiently at each temperature and the excellent APC characteristic is attained.

L35 ANSWER 50 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1990-300727 JAPIO
TI OPTICAL FIBER **AMPLIFIER**
IN HORIGUCHI MASAHARU; SHIMIZU MAKOTO; YAMADA MAKOTO; SUGITA ETSUJI
PA NIPPON TELEGR & TELEPH CORP <NTT>
PI JP 02300727 A 19901212 Heisei
AI JP 1989-121228 (JP01121228 Heisei) 19890515
PRAI JP 1989-121228 19890515
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1990
AB PURPOSE: To **amplify** the light with a small noise and a high **amplification** factor by specifying the coefficient of linear expansion of secondary coating materials of an optical fiber to which a **laser** active material is added and cooling them to a very **low temperature**.
CONSTITUTION: Signal light is **amplified** in a single mode optical fiber which is cooled by a cooling thermostat 11 and to which Er is added, and this light passes a condenser lens 3, an isolator 20, and a cut filter 16 and is received by a photodetector 14. At this time, a silicone resin is used as primary coating materials of the optical fiber 6, and thermotropic liquid crystal high polymer materials where macromolecular chains are oriented by extrusion or fluid draw ing are used as secondary coating materials. Since the coefficient of linear expansion of this liquid crystal is reduced in accordance with orientation, it is set to ±10<SP>-5</SP> <SP>0</SP>C<SP>-1</SP> so that it is approximated to the coefficient of linear expan sion of the optical fiber. Consequently, the occurrence of the microbending loss due to the difference of coefficient of linear expansion is prevented at a very **low temperature** <=-60°C. Thus, an optical fiber **amplifier** of high perfor mance where the noise is considerably reduced is obtained.

L35 ANSWER 51 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1990-263124 JAPIO
TI ISOTHERMAL CONTROL TYPE CALORIMETER
IN SUZUKI YASUYUKI; MURATA AKIHIRO; KOMIYAMA MAKOTO
PA YOKOGAWA ELECTRIC CORP
PI JP 02263124 A 19901025 Heisei
AI JP 1989-138347 (JP01138347 Heisei) 19890531
PRAI JP 1988-309166 19881207
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1990
AB PURPOSE: To prevent an output from varying owing to atmospheric pressure variation by outputting the signal which is obtained by subtracting the signal of a 2nd temperature difference element from the signal of a 1st temperature difference signal to a main **amplifier** side.
CONSTITUTION: When **laser** light La to be measured is incident, a photodetection body 1 absorbs the light and the temperature of a heat conduction plate 1a rises, so a temperature difference from a temperature reference jacket 10 is generated. The 1st and 2nd temperature difference detecting elements (5, 5a) and (5', 5a') detect the temperature difference and a feedback **amplifier** 8 controls a heater according to their electric signals to **lower** the **temperature** of the heater, thereby controlling the temperatures of the heat conduction plate 1a and temperature reference jacket 10 to constant temperatures. Then when the atmospheric pressure varies, a temperature difference is generated and a preamplifier 11 outputs the signal wherein variation of the output signal due to atmospheric pressure variation generated between 1st and 2nd

sensors 30 and 31 is canceled.
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L35 ANSWER 52 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1990-062107 JAPIO
TI SLICE **AMPLIFIER**
IN OKUMA YOSHINORI
PA FUJITSU LTD
PI JP 02062107 A 19900302 Heisei
AI JP 1988-213156 (JP63213156 Showa) 19880826
PRAI JP 1988-213156 19880826
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1990
AB PURPOSE: To control to change the duty ratio of an output waveform to an ambient temperature change by matching to the temperature change of-the pinchoff of an FET and changing a bias voltage by a temperature compensating circuit.
CONSTITUTION: A voltage converting part 2 is connected to the source side electrode S side of an FET 1, a voltage converting part 2 is connected, and on the other hand, a load circuit 4 such as a **laser** diode is connected to a drain electrode D side. The converting part 2 includes a temperature detecting part 3, a stabilized source voltage VS, in which the value is changed in accordance with the temperature detected by the detector 3, is supplied to a source electrode S of an FFT1. The voltage VS become lower at the time of the **low temperature**, the width of a voltage Vgs between gate sources is made narrow, on the other hand, the voltage becomes higher at the time of the high temperature, the width of the voltage Vgs is made wider and as such, the change is executed for the temperature. The temperature variation of the voltage VS is adjusted so as to be coincident to the variation of a pinchoff voltage V<SB>p</SB> of the FET1. Thus, for the temperature change, the voltage VS is changed for the temperature change following the voltage V<SB>p</SB>, and thus, the slice level of the input waveform is made always constant to the temperature.
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L35 ANSWER 53 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1988-280482 JAPIO
TI OPTICAL TRANSMISSION CIRCUIT
IN FUJIMORI NARIHIKO
PA NEC CORP
PI JP 63280482 A 19881117 Showa
AI JP 1987-113649 (JP62113649 Showa) 19870512
PRAI JP 1987-113649 19870512
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1988
AB PURPOSE: To make constant the light output of a **laser** diode, to improve an extinction ratio at high temperature and to inhibit the light output of the **laser** diode within an allowable range at **low temperature** by a method wherein both of a **laser** diode AC controlling circuit and a **laser** diode DC controlling circuit are simultaneously controlled by the output voltage signal of a photodiode.
CONSTITUTION: A switching transistor 8 is turned-ON/OFF by data and clock signals on an input signal converting circuit 7. Moreover, the back emitted light of a **laser** diode 6 is detected by a photo diode 1, the output is compared with the average value of input electrical signals, which are used as a reference voltage, by a differential **amplifier** 3 and the difference signal is inputted in the bases of a **laser** diode DC controlling transistor 10 and a **laser** diode AC controlling transistor 9. The DC of the driving current of the diode 6 and the AC of the driving current of the diode 6 are respectively changed simultaneously in the transistors 10 and 9. That is, the driving current

of the diode 6 is increased or decreased by an increase or decrease in the light output to make the light output constant.

L35 ANSWER 54 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1988-205544 JAPIO
TI **LASER** MAGNETIC RESONANCE DEVICE
IN HANIYU YOSHIAKI
PA HITACHI LTD
PI JP 63205544 A 19880825 Showa
AI JP 1987-37915 (JP62037915 Showa) 19870223
PRAI JP 1987-37915 19870223
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1988
AB PURPOSE: To detect the **laser** magnetic resonance spectrum of paramagnetic molecules of a short life by providing a pair of comb-shaped electrodes for high-frequency discharge which impress an electric field to the same direction as a magnetostatic direction for measurement to the inside or outside of a measuring pipe in a magnetostatic field for measurement.
CONSTITUTION: The electrodes 13 for high-frequency discharge are installed between the measuring pipe 7 and an electromagnet 8. The magnetostatic direction by the electromagnet 8 and the electric field direction of the electrode 13 are made to coincide with each other, by which the instability of **low-temp**. plasma is prevented as the electrons and ions in the **low-temp**. plasma does not receive the force in the axial direction of the measuring pipe even in the magnetostatic field. Since the AC magnetic field by a coil 9 for modulation to detect the **laser** magnetic resonance spectrum with high sensitivity is not shut off by the electrodes 13 which are formed of comb-shape, said magnetic field is effectively impressed to the paramagnetic molecules. The **laser** magnetic resonance spectrum of the paramagnetic molecules of a short life is detected by detecting a far IR **laser** 11 radiated from the window 10 by a detecting and **amplifying** system 12.

L35 ANSWER 55 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1988-191989 JAPIO
TI **LASER** DOPPLER SPEEDOMETER
IN TASHIRO HIDEO
PA MITSUBISHI ELECTRIC CORP
PI JP 63191989 A 19880809 Showa
AI JP 1987-24325 (JP62024325 Showa) 19870204
PRAI JP 1987-24325 19870204
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1988
AB PURPOSE: To suppress a deviation in wavelength with temperature and to reduce errors in speed measurement by controlling a semiconductor **laser** to constant temperature.
CONSTITUTION: A heat-sensitive element 12 detects the temperature of the semiconductor **laser** 2 and inputs it to an error **amplifier** 13. The **amplifier** 13 compares it with reference temperature T<SB>0</SB> and the power **amplification** of the difference signal is performed to drive an electrothermal converter 15. The converter 15 is composed of a Peltier element; and one side of the element is joined with the **laser** 2 and heat is radiated from the other. When the temperature of the **laser** 2 is higher than a reference temperature T<SB>0</SB>, a positive current flows to the converter 15 to cool the **laser**, but when the **temperature** is **lower**, on the other hand, a negative current flows to heat the **laser** 2, which is controlled to the constant temperature T<SB>0</SB> at all times. Thus, speed measurement errors due to a

wavelength deviation are reduced.

L35 ANSWER 56 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1988-038140 JAPIO
TI FAR INFRARED MAGNETIC LIGHT ABSORPTION MEASURING INSTRUMENT HAVING HIGH STABILITY
IN YAMADA SEIJI
PA NIPPON TELEGR & TELEPH CORP <NTT>
PI JP 63038140 A 19880218 Showa
AI JP 1986-182997 (JP61182997 Showa) 19860804
PRAI JP 1986-182997 19860804
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1988
AB PURPOSE: To obtain a stable absorption signal by obtaining a reference signal within a **low-temp**. vessel in which the same environment as the environment for sample measurement is maintained.
CONSTITUTION: The far IR **laser** light of a light guide 3 is bisected by a half mirror 6 in the **low-temp**. vessel 1. One **laser** light projects the sample 2 and the absorption signal of the sample 2 is measured by a 1st detector 8. The other **laser** light passes the 2nd detector 9 and is taken out as the reference signal. The bias voltages of the detectors 8, 9 and the gains of **amplifiers** 10, 10 are so adjusted that the absorption signal and the reference signal have the same **amplitude**. The quotient of the detected values of the detectors 8, 9 is taken and the output fluctuation of the projected light with respect to the sample 2 is determined. The reference signal is obtd. in the **low-temp**. vessel 1 in which the same environment as for the measurement of the sample 2 is maintained in the above-mentioned manner; therefore, the output change of the far IR **laser** light and the output fluctuation of the detectors are offset and the stable absorption signal is obtd.

L35 ANSWER 57 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1987-177987 JAPIO
TI AUTOMATIC POWER CONTROL METHOD OF SEMICONDUCTOR **LASER** DRIVE CIRCUIT
IN NISHITOKU KOUJI
PA RICOH CO LTD
PI JP 62177987 A 19870804 Showa
AI JP 1986-17784 (JP61017784 Showa) 19860131
PRAI JP 1986-17784 19860131
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1987
AB PURPOSE: To raise the resolution of an automatic power control by temperature- controlling the digital-to-analog conversion output level, and simultaneously temperature-controlling the reference potential of an operational **amplifier** which an analog output signal is input.
CONSTITUTION: A monitoring light from a semiconductor **laser** LD is photodetected by a photodiode PD, and compared by a comparator 6 with a reference level through an operational **amplifier** 5. The output of the comparator 6 is input through a gate array/CPU2 to a D/A converter 3. The output current of the converter 3 is determined by the parallel resistance value of the resistor 3 and a thermistor Th2 and increased as the temperature rises. The output current of the converter 3 is input to the inverting input terminal of an operational **amplifier** IC1. The reference voltage of the **amplifier** IC1 is determined by the parallel resistance value of the resistor R2 and the thermistor Th2, and **lowered** as the **temperature** rises.

L35 ANSWER 58 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1987-060129 JAPIO
TI OPTICAL RECORDING AND REPRODUCING DEVICE
IN MATSUO YASUNOBU
PA MATSUSHITA ELECTRIC IND CO LTD
PI JP 62060129 A 19870316 Showa
AI JP 1985-201113 (JP60201113 Showa) 19850911
PRAI JP 1985-201113 19850911
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1987
AB PURPOSE: To secure the correct recording operation even at a **low** or high **temperature** by increasing or decreasing the recording power of a **laser** in accordance with the change of characteristics of a recording medium that is caused by the temperature change.
CONSTITUTION: When the recording signal is **amplified**, the gain of an **amplifier** is controlled by the temperature and corrected by a share equivalent to the change of the recording characteristics of a magnetic disk due to the temperature of a recording medium. Then a **laser** is modulated by the recording signal underwent the correction of temperature. Thus a recording current IR is increased or decreased for correction of the difference of sensitivity of the recording medium due to the temperature change. Thus, it is possible to perform the uniform recording to the medium by correcting the change of characteristics due to the temperature and humidity change.

L35 ANSWER 59 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1985-163476 JAPIO
TI LIGHT SOURCE STABILIZATION DEVICE
IN KIMIZUKA JUNICHI; SETO KAORU; USHIO YUKIHIDE
PA CANON INC
PI JP 60163476 A 19850826 Showa
AI JP 1984-19173 (JP59019173 Showa) 19840203
PRAI JP 1984-19173 19840203
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1985
AB PURPOSE: To stabilize the light amount of a light emitting element in luminous wavelength by a method wherein the light emitting element and a photo detecting element arranged on the same base are temperature-controlled at the same time and light-amount-controlled.
CONSTITUTION: A semiconductor **laser** generator 1 and the photo detecting element 11 are mounted on the base 2 excellent in thermal conductivity. When the temperature of the base 21 is low, the resistance of a temperature-detecting element 23 increases, and the voltage of an input terminal 25 increases. When this voltage becomes higher than a referance voltage determined by divided resistors 28 and 29, an operational **amplifier** 30 of a temperature control circuit 24 acts so as to increase the collector current of a transistor 33, resulting in the increase in current of a heater 22, and in temperature of the base 21. On the other hand, when the temperature of the base 21 is high, the collector current decreases as compared with the case of **low temperature**. As a result, the temperature of the base 21 is kept constant. Therefore, at the time of light amount control, the variation in sensitivity due to the change in temperature of the photo detecting element can be prevented; accordingly, the light amount can be stabilized and at the same time the variation in luminous wavelength of the light emitting element can be prevented. The resistor 29 is made variable 29, and the resistance value can be switched according to regions for device use, so as to switch the control temperature.

L35 ANSWER 60 OF 66 JAPIO COPYRIGHT 2003 JPO

AN 1984-231883 JAPIO
TI **LOW-TEMPERATURE** OPERATION INFORMATION PROCESSOR AND SIGNAL PROCESSING METHOD USING SAID PROCESSOR
IN ONO TOMIZO
PA HITACHI MICRO COMPUT ENG LTD
HITACHI LTD
PI JP 59231883 A 19841226 Showa
AI JP 1983-105712 (JP58105712 Showa) 19830615
PRAI JP 1983-105712 19830615
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1984
AB PURPOSE: To process a large amount of informations at high speed by a small- sized device, and to obtain a small-sized signal input/output means by using an optical-fiber for the transmission or reception of the I/O of a computer employing a Josephson junction element and signals with other outsides.
CONSTITUTION: A signal processor is constituted by the principal section of an information-processor interface section J.C using a Josephson junction, a high electron moving device G.D mounted on a substrate in GaAs, etc. and a circuit in which a GaAsAl mixed crystal **laser** -driver LED and a semiconductor photodetector DET are unified. An optical-fiber OP is brought into contact with the LED device side, and each circuit is connected by transfer lines SL<SB>1</SB>∼SL<SB>4</SB> and output signals **amplified** by the device G.D are outputted from the fiber OP as optical signals. In the constitution, each device and the fiber section are immersed in liquid He of 4.2K, and kept at a **low temperature**.

L35 ANSWER 61 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1984-191149 JAPIO
TI MECHANISM FOR CONTROLLING OPTICAL RECORD
IN TOYAMA TAKEO
PA SANYO ELECTRIC CO LTD
PI JP 59191149 A 19841030 Showa
AI JP 1983-66553 (JP58066553 Showa) 19830414
PRAI JP 1983-66553 19830414
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1984
AB PURPOSE: To prevent deterioration of the recording characteristics of a recording track due to the irradiation of reproduction **laser** beam, by inhibiting the irradiation of the reproduction **laser** beam to the recording track immediately after the recording track is formed until the temperature of the track drops to a level at which the recording track is not deteriorated by the irradiation of the reproduction **laser** beam.
CONSTITUTION: Under the recording waiting mode, the 1st analog switch S<SB>1</SB> is closed and a pre-heating electric current is made to flow to a **laser** diode so as to heat a recording track to about 150°C. Then, following to the generation of a recording command signal REC, an **amplitude** controlling transistor (TR) Q<SB>3</SB> is conducted by 1-frame period synchronously to a vertical synchronizing signal VD and a recording current IR flows to the **laser** diode D, and thus, the recording mode is set. The reproducing waiting mode is set when the TR Q<SB>3</SB> is set to a non-conductive condition simultaneously with the termination of the 1-frame recording mode and the 1st analog switch S<SB>1</SB> is opened and, at the same time, the 3rd analog switch S<SB>3</SB> is closed for a period equal to 5∼6 frames. During the reproducing waiting mode, a disk **lowers** the **temperature** of the recording track to the level of about room temperature while the optical system maintains the control.

L35 ANSWER 62 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1984-135940 JAPIO
TI OPTICAL OUTPUT CONTROL CIRCUIT
IN URATA HARUSHIGE; UCHIDA YUKIO; AOKI CHIKAO; OZEKI YUKIHIRO
PA OKI ELECTRIC IND CO LTD
PI JP 59135940 A 19840804 Showa
AI JP 1983-9305 (JP58009305 Showa) 19830125
PRAI JP 1983-9305 19830125
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1984
AB PURPOSE: To obtain a large extinction ratio at a region with less bias current by performing optical output control by bias current/pulse current in response to a **low**/high **temperature** region of a **laser** diode to stabilize the optical output control.
CONSTITUTION: In a high speed switching circuit SW, a transistor (TR)1 is turned off when a pulse of an input signal Sin is positive and a TR2 is turned on and when the pulse is negative, the TR1 is turned on and the TR2 is turned off, a current applied from a constant current circuit CCP flows to the TR1 of TR2 and a pulse current IP is supplied to a **laser** diode LD. A constant current circuit CBC supplies a bias current IB proportional to a voltage applied from an **amplifier** APC to the LD. A limiter LIM controls the output of the APC by a setting voltage of a resistor R<SB>v2</SB>. Further, the CCP supplies a current IP proportional to the supply voltage from the LIM to the SW. Further, the optical output control is performed by the change in the IB at a temperature being T<SB>0</SB> or over and by the change in the IP at the T<SB>0</SB> or below.

L35 ANSWER 63 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1984-124182 JAPIO
TI SEMICONDUCTOR **LASER** DRIVING CIRCUIT
IN IFUKURO SADAO; FUKUI HIROSHI
PA FUJITSU LTD
PI JP 59124182 A 19840718 Showa
AI JP 1982-229245 (JP57229245 Showa) 19821229
PRAI JP 1982-229245 19821229
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1984
AB PURPOSE: To generate the light output which correctly corresponds to input pulses even for a **laser** device wherein both a threshold current and differential efficiency change with temperature fluctuation, by making a bias current and an **amplitude** current variable.
CONSTITUTION: A reference voltage pulse (a) is applied to an adding point 1. At this point 1, the error between the voltage output of a photoelectric conversion circuit 10 and the reference voltage is detected. The error voltage is **amplified** 2 and inputted to a level shift circuit 3 and a voltage to current conversion circuit 6. At a **temperature lower** than a specified temperature, a specified value is added to the input in the circuit 3. A slant generating circuit 4 generates an **amplitude** current, which is linearly increased with the increase in a bias current. Then a clamping circuit 5 clamps the **amplitude** current, which is lower than the specified value, at the specified value. The circuit 6 generates the bias current in response to the **amplifier** 2. A voltage to current conversion circuit 7 generates the **amplitude** current. An adder circuit 8 adds the output currents of the circuits 6 and 7 and generates a driving current for an LED9. The circuit 10 generates a voltage corresponding to the light generated by the LED9.

L35 ANSWER 64 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1984-043586 JAPIO

TI OUTPUT STABILIZING CIRCUIT FOR SEMICONDUCTOR **LASER**
IN NAKAMURA MASARU; KOSEKI TAKESHI
PA TOSHIBA CORP
PI JP 59043586 A 19840310 Showa
AI JP 1982-152560 (JP57152560 Showa) 19820903
PRAI JP 1982-152560 19820903
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1984
AB PURPOSE: To eliminate excess light emission to lose the lifetime of a semiconductor **laser** by reducing the error signal component AC **amplitude** of light output to the minimum value in the **lowest temperature** of the allowable operation temperature range of the **laser**.
CONSTITUTION: An output stabilizing circuit is adjusted in the **lowest temperature** in an allowable operation temperature range or in the **lowest temperature** state which is produced in a similar manner, the **amplitude** of the error signal component is suppressed to the vicinity of zero. The increment of the output which is calculated in advance from the input-output curve of a semiconductor **laser** is represented as the similar **lowest temperature** state by installing an **amplifier** 51 in a feedback loop. A switch 50 is formed of two systems, one of which is an **amplifier** 51, and the other of which is adjusted and is a system used when the feedback loop is closed and actually operated. The error signal component **amplitude** becomes 0 at the **lowest temperature**, and increased to positive direction at the other temperature, and the light output does not become excessive even in the moment in any temperature state.

L35 ANSWER 65 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1983-225675 JAPIO
TI ION **LASER** DEVICE
IN TAKAHASHI NORIO
PA NEC CORP
PI JP 58225675 A 19831227 Showa
AI JP 1982-109059 (JP57109059 Showa) 19820624
PRAI JP 1982-109059 19820624
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1983
AB PURPOSE: To obtain a stabilized ion **laser** device by a method wherein the dew condensation on the surface of a transistor is prevented irrespective of the temperature of city water, atmospheric temperature and humidity.
CONSTITUTION: When the atmosphric **temperature** is **lower** than the surface temperature of the transistor 11, a detection signal goes up through elements 16 and 17, the output voltage of a comparative **amplifier** 20 is boosted, and the electromagnetic valve 18 is opened by a circuit 19. City water 7 runs to a container 10', and the surface temperature of the transistor comes down. When said surface temperature approaches the atmosphric temperature, the output voltage of the comparative **amplifier** is lowered, the valve 18 is closed by the circuit 19, and the surface temperature of the transistor goes up. Thus, the surface temperature of the transistor is maintained approximately 10°C higher than the atmospheric temperature, thereby enabling to prevent dew condensation of the surface of the transistor. According to this constitution, the insulative property between the transistor and a water container 10' is not deteriorated, the breakage and deterioration of the transistor, a **laser** power source, and a current control circuit can be prevented, and city water 7 is economized, thereby enabling to obtain the stabilized ion **laser** device.

L35 ANSWER 66 OF 66 JAPIO COPYRIGHT 2003 JPO
AN 1979-152880 JAPIO
TI SEMICONDUCTOR **LASER** TEMPERATURE CONTROL UNIT
IN HARIKAE SHUNJI; YOSHIDA TOMIO; NAKADA AKIFUMI; SATO TOSHIO
PA MATSUSHITA ELECTRIC IND CO LTD
PI JP 54152880 A 19791201 Showa
AI JP 1978-61970 (JP53061970 Showa) 19780523
PRAI JP 1978-61970 19780523
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1979
AB PURPOSE: To secure operation of the **laser** without any breakdown and the characteristic deterioration in both the high and **low temperature** atmospheres by combining the semiconductor **laser** and the temperature control circuit.
CONSTITUTION: Temperature sensor 1 connected to temperature detector circuit 2 is provided near semiconductor **laser** 7 connected to driving circuit 8, and the output of circuit 2 is sent to differential **amplifier** 3 to which variable resistance 4 is connected to set the temperature of **laser** 7 to the fixed level. Then the output of **amplifier** 3 is sent to thermo-module 6 via phase compensating filter 4 and thermo-module driving circuit 5, and the surface of module 6 is cooled down and heated up. In this case, resistance R<SB>2</SB> is provided previously between circuit 5 and the module, and the overlap voltage of the resistance are compared via voltage comparator 9 containing variable resistance R<SB>3</SB>. After this, circuit 8 is driven by the output of comparator 9, and **laser** 7 is actuated with the set temperature.

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SYSTEM:OS  - DIALOG OneSearch
  File 348:EUROPEAN PATENTS  1978-2003/Apr W04
        (c) 2003 European Patent Office
  File 349:PCT FULLTEXT  1979-2002/UB=20030515,UT=20030508
        (c) 2003 WIPO/Univentio

Set     Items   Description
S1     159154   (LASER? ? OR LUMINANCE OR LUMINESCENCE OR PHOTOLUMINAT? OR
             ILLUMINAT? OR ILLUM? OR ILLUMINE? OR LIGHT? ?)/TI,AB,CM
S2      69044   (AMPLI? OR (EMITTER OR CATHODE)(2N)(FOLLOWER? ?))/TI,AB,CM
S3      21961   (CRYOGENIC? OR (LOW? OR COLD?)(2N)(TEMPERATURE OR TEMP))/T-
             I,AB,CM
S4       2691   (WATT? ?)/TI,AB,CM
S5         43   S1(S)S2(S)S3
S6          3   S5 AND S4
S7       5303   S2(3N)(MEDIUM OR MULTIPASS OR MULTI(W)PASS OR APPARATUS OR
             DEVICE? OR INSTRUMENT? OR TOOL? ?)
S8         12   S7(S)S3
S9         12   S8 NOT S6
S10        39   S5 NOT (S6 OR S8)
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6/TI,PN,PD,PR,AB/1 (Item 1 from file: 349)

HAND HELD INDUCTION TOOL
OUTIL A INDUCTION A MAIN
Patent and Priority Information (Country, Number, Date):
Patent: WO 200133909 A2-A3 20010510 (WO 0133909)
Priority Application: US 99163301 19991103

English Abstract
An apparatus and system for using magnetic fields to heat magnetically susceptible materials within and/or adjacent to adhesives, resins, or composites so as to reversibly or irreversibly bond, bind, or fasten opaque or non-opaque solid materials to one another. The system makes use of the effect that alternating magnetic fields induce eddy currents and generate heat within susceptors, and the effect that alternating magnetic fields additionally induce magnetic hysteresis that occurs in magnetic materials and thereby generate heat. An induction heating tool is used to emit the magnetic field at its work coil, and an electronic controller measures the energy being used by a power converter that generates the alternating current driving the work coil which creates the magnetic field. The distance between the susceptor and work coil is repeatedly analyzed based upon the power converter's input energy, and the work coil is driven at a repeatedly corrected power level during the heating cycle. Once a sufficient accumulated energy has been delivered to the susceptor, the magnetic field is turned off automatically by the tool, thus preventing overheating of the susceptor.

6/TI,PN,PD,PR,AB/2 (Item 2 from file: 349)

MODULAR LASER GYRO
GYROSCOPE A LASER MODULAIRE
Patent and Priority Information (Country, Number, Date):
Patent: WO 9514906 A2 19950601
Priority Application: US 93161555 19931129

English Abstract
A modular laser gyro incorporating a laser gyro with a digital control processor. The digital control processor safely and quickly starts the laser gyro. The microprocessor also executes tests on the gyro and provides a health signal. Optional start-up operations may be performed including the calibration of volts per mode and system configuration. Various information including gyro parameter load commands, gyro control commands, gyro status commands, and gyro calibration and diagnostic commands may be provided to an inertial navigation system. A high voltage start circuit includes a high voltage start module and high voltage pulse generator apparatus. The high voltage start circuit is contained within a modular laser gyro housing. A direct digital dither drive for a dither motor controls the dithering of the gyro to prevent lock in of the laser beams. A dither stripper controls the stripping of the dither signal. A bias drift rate improvement system, as well as a random drift rate improvement system reduces errors. A lifetime prediction mechanism incorporates a memory model that stores worst case performance parameters and evaluates them against predetermined failure criteria. An active current control controls lasing current to prolong life and enhance performance. A single transformer power supply powers the modular gyro.

9/TI,PN,PD,PR,AB/1 (Item 1 from file: 348)

Low-temperature preamplifier
Tieftemperaturvorverstarker
Preamplificateur a basse temperature
PATENT (CC, No, Kind, Date): EP 1081455 A1 010307 (Basic)

ABSTRACT EP 1081455 A1

A method and **apparatus** for **amplifying** low-level electrical signals at low temperatures (typically below 4.2 K) is disclosed. The problem of large heat dissipation ((approximate) mW) in **cryogenic** amplifiers (1, 2, 8) is solved. A **low-temperature** section (3) comprises a field-effect transistor or FET (1) and an elevated temperature section comprises current sensing means (2), such as an operational amplifier or op-amp (2). According to the invention the FET (1) is operated in the small-signal ohmic regime. Thereby ultra-low power losses in the FET (1) (e. g. below (approximate) 1 nW) are achieved. One or several FETs (1) can be mounted inside a cryostat close to a measuring impedance (ZTF))) with negligible heating of the cryostat. A particular stable operation of the FET (1) in the ohmic regime and a selectable operating point are realized by supplying a constant source-drain voltage USD)) (e. g. 1 (mu)V - 100 mV) and a separately adjustable gate-drain voltage UGD)). An amplifier (1, 2, 8) for implementing the method and a scanning probe microscope comprising the amplifier (1, 2, 8) are disclosed as well.

9/TI,PN,PD,PR,AB/2 (Item 2 from file: 348)

Anti-reflection coatings.
Antireflektions-Schichten.
Couches anti-reflechissantes.
PATENT (CC, No, Kind, Date): EP 321087 A1 890621 (Basic)
PRIORITY (CC, No, Date): GB 8729104 871214

ABSTRACT EP 321087 A1

Optical **devices**, e.g. **amplifiers**, include anti-reflection coatings of hafnium oxide. The coatings are obtained by **low temperature** deposition in the presence of oxygen. It is important to adjust the degree of oxidation in order to obtain the target refractive index. Slower rates of deposition and oxidation favour stability of performance parameters. The coatings are useful for application to GaInAsP semiconductors.

9/TI,PN,PD,PR,AB/3 (Item 3 from file: 348)

Addressing liquid crystal cells.
Adressierung von Flussigkristallzellen.
Adressage de cellules a cristaux liquides.
PATENT (CC, No, Kind, Date): EP 303343 A1 890215 (Basic)
EP 303343 B1 921216
PRIORITY (CC, No, Date): GB 8716992 870718

ABSTRACT EP 303343 A1
The working temperature range of a 2um thick negative dielectric anisotropy smectic C phase filled ferroelectric liquid crystal cell that is addressed on a matrix basis with balanced bipolar data pulses and unipolar strobe pulses is extended by the inclusion of a temperature sensor to use the temperature of the cell to control the magnitudes of the data and strobe pulse waveforms and to provide, at least at high temperatures, a stabilisation waveform with a frequency twice the fundamental frequency of the data pulse waveform.

9/TI,PN,PD,PR,AB/4 (Item 4 from file: 348)

Image pick up apparatus having pixel compensation circuit.
Bildaufnahmegerat mit einem Bildelement-Kompensationskreis.
Appareil d'analyse d'image comportant un circuit de compensation d'element d'image.

PATENT (CC, No, Kind, Date): EP 291354 A2 881117 (Basic)
EP 291354 A3 890503
EP 291354 B1 930721
PRIORITY (CC, No, Date): JP 87117946 870514; JP 87126212 870522; JP 87231156 870917

ABSTRACT EP 291354 A2

In an image pick up apparatus having an image pick up device (1), an amplifier (2), a vertical contour compensation circuit (500), a gamma correction circuit (8), a horizontal contour compensation circuit (9), a color operation circuit (200), and an encoder (10), pixel compensation circuits (100, 100(min)) are provided for reducing modulation components caused by a color filter during saturation in an image pick up device (1). Horizontal low-pass circuits (7a, 7b) combined with clippers (24a, 24b) are provided in the vertical contour compensation circuit (500) to reduce a modulation components caused by such compensation in the pixel compensation circuits (100, 100(min)).

9/TI,PN,PD,PR,AB/5 (Item 5 from file: 348)

Superconducting transistor.
Supraleitender Transistor.
Transistor supraconducteur.
PATENT (CC, No, Kind, Date): EP 163031 A2 851204 (Basic)
EP 163031 A3 890118
EP 163031 B1 910605
PRIORITY (CC, No, Date): US 604183 840426

ABSTRACT EP 163031 A2
Superconducting transistor.
This invention relates generally to **cryogenic amplifying** -switching **devices** and more specifically relates to a **cryogenic** transistor (1) with a superconducting base (3) and a collector (4) isolated from the base by a semconductor element (6). Still more specifically, the invention is directed to a three terminal, transistor-like device which incorporates three metal layers (2, 3, 4). The first (2) and second (3) of the three layers are separated by an insulating tunnel barrier (5) and the second (3) and third (4) layers are separated by a semiconductor layer (6) of a thickness sufficient to inhibit tunneling. The semiconductor layer has a low barrier height which is sufficient to permit the passage of quasiparticles from the second layer while simultaneously inhibiting the passage of Cooper pairs. The second layer (3) is a superconductor while the first and third layers (2, 4) may be superconductors or normal metals. The second and third layers (2, 4) are connected to the semiconductor layer (6) by means of ohmic contacts.

9/TI,PN,PD,PR,AB/6 (Item 1 from file: 349)

METHOD AND APPARATUS FOR AMPLIFICATION OF NUCLEIC ACID SEQUENCES USING IMMOBILIZED DNA POLYMERASE

PROCEDE ET APPAREIL PERMETTANT D'AMPLIFIER DES SEQUENCES D'ACIDES NUCLEIQUES A L'AIDE D'UNE ADN POLYMERASE IMMOBILISEE

Patent and Priority Information (Country, Number, Date):
Patent: WO 200338127 A1 20030508 (WO 0338127)
Priority Application: KR 200166943 20011030

English Abstract
The present invention generally relates to methods and apparatuses for amplifying nucleic acid sequences using immobilized DNA polymerase. More particularly, it relates to methods and apparatuses useful for amplifying target nucleic acid sequences by forming a plurality of reaction regions in which polymerase chain reaction (PCR) can occur, positioning immobilized DNA polymerase in a specific reaction region, and circulating DNA through the reaction regions. The present invention provides those methods and apparatuses that allow simple separation and recovery of the DNA polymerase after the amplification, that can be operated not only with thermostable DNA polymerases but also with non-thermostable DNA polymerases, and that are simpler in their designs and processes so that they can be readily integrated into complex devices such as Lap-on-a-chip.

9/TI,PN,PD,PR,AB/7 (Item 2 from file: 349)

METHOD AND APPARATUS FOR AMPLIFICATION OF NUCLEIC ACID SEQUENCES BY USING THERMAL CONVECTION

PROCEDE ET APPAREIL PERMETTANT D'AMPLIFIER DES SEQUENCES D'ACIDES NUCLEIQUES PAR THERMOCONVECTION

Patent and Priority Information (Country, Number, Date):
Patent: WO 200325226 A1 20030327 (WO 0325226)
Priority Application: KR 200157040 20010915; KR 200166943 20011030

English Abstract
The present invention provides a nucleic acid sequence amplification method and apparatuses thereof that are simple in the design and easy to miniaturize and integrate into complex apparatuses, with capability of using DNA polymerases that are not thermostable. In the present invention, a plurality of heat sources are combined to supply or remove heat from specific regions of the sample such that a specific spatial temperature distribution is maintained inside the sample by locating a relatively high temperature region lower in height that a relatively low temperature region.

9/TI,PN,PD,PR,AB/8 (Item 3 from file: 349)

CRYOGENIC DEVICES
DISPOSITIF CRYOGENIQUES
Patent and Priority Information (Country, Number, Date):
Patent: WO 200221708 A2-A3 20020314 (WO 0221708)
Priority Application: US 2000230682 20000907; US 2001265917 20010202

English Abstract
This invention relates generally to cryogenic devices and, more particularly, to cryogenic devices of very small size based on superconducting elements, low thermal transmission interconnects and low dissipated power semiconductor devices.

9/TI,PN,PD,PR,AB/9 (Item 4 from file: 349)

OPTICALLY PUMPED SOLID STATE MASER
DISPOSITIFS DE MICRO-ONDES FONDES SUR LA POLARISATION DYNAMIQUE DE SPIN INDUITE PAR VOIE CHIMIQUE

Patent and Priority Information (Country, Number, Date):
Patent: WO 200178201 A2-A3 20011018 (WO 0178201)
Priority Application: US 2000548012 20000412

English Abstract
Optically pumped maser are described. The devices are useful for microwave amplification, microwave phase shifting and microwave limiting function. The devices are based on electron spin polarization of a stable free radical species induced by an intermolecular energy transfer process acting via a photo induced radical triplet pair mechanism. A radical triplet precursor chromophore in a matrix with the stable free radical species is irradiated, preferably using a pulsed laser to initiate the process with concomitant increase in matrix magnetic susceptibility. Microwave radiation incident on the photo activated matrix is reflected as amplified, phase shifted or limited microwave fields dependent on relevant device parameters and on the power of the incident microwave radiation.

9/TI,PN,PD,PR,AB/10 (Item 5 from file: 349)

POLYMERASE CHAIN REACTION SYSTEM
SYSTEME D'AMPLIFICATION EN CHAINE PAR POLYMERASE
Patent and Priority Information (Country, Number, Date):
Patent: WO 200149416 A1 20010712 (WO 0149416)
Priority Application: US 2000174416 20000104; US 2000752794 20001229

English Abstract
A portable polymerase chain reaction DNA amplification and detection system includes one or more chamber modules. Each module supports a duplex assay of a biological sample. Each module has two parallel interrogation ports with a linear optical system. The system is capable of being handheld.

9/TI,PN,PD,PR,AB/11 (Item 6 from file: 349)

REVERSIBLE THERMOELECTRIC CONVERTER
CONVERTISSEUR THERMOELECTRIQUE REVERSIBLE
Patent and Priority Information (Country, Number, Date):
Patent: WO 9320589 A1 19931014
Priority Application: US 92860677 19920330

English Abstract
A reversible thermoelectric converter includes first and second quantum well diodes (10, 20) and an electrical connection between the diodes without a thermal barrier between them. Each diode includes first and second electrodes (40, 42) wherein electrons are quantized in discrete energy levels and a dielectric layer (44) providing a potential barrier between the first and second electrode (40, 42). When electrons in the first diode (10) have a higher temperature than the electrons in the second diode (20), electric voltage fluctuations resulting from transitions of the electrons between the energy levels in the first diode (10) are coupled from the first diode (10) to the second diode (20). The reversible thermoelectric converter can be operated for converting thermal energy to electric energy, as a heat pump or a refrigerator or as an amplifier. A planar array of reversible thermoelectric converter elements provides a desired output voltage and current.

9/TI,PN,PD,PR,AB/12 (Item 7 from file: 349)

TEMPERATURE CONTROLLING OR DETECTING DEVICE
DISPOSITIF DE COMMANDE OU DE DETECTION DE TEMPERATURE
Patent and Priority Information (Country, Number, Date):
Patent: WO 8300574 A1 19830217
Priority Application: GB 8123950 19810805

English Abstract
A temperature controlling or detecting device has a circuit which comprises a temperature-sensitive element (1) whose electrical resistance changes with temperature. Changes in the resistance of the said element (1) are detected by an arrangement including a Wheatstone bridge and an operational amplifier (15). The amplifier (15) produces an output signal at a predetermined temperature or at the upper and lower limits of a predetermined temperature range in response to changes in resistance of element (1). At least a sufficient part of the circuit is encapsulated in a resin to prevent ready adjustment of the said predetermined temperature or temperature range.

10/TI,PN,PD,PR,AB/1 (Item 1 from file: 348)

Optical component for compensating the temperature dependence of the gain
Optisches Element zur Kompensation der Temperaturabhangigkeit der Verstarkung
Dispositif optique pour la compensation de l'influence de la temperature sur l'amplification
PATENT (CC, No, Kind, Date): EP 1120871 A1 010801 (Basic)
PRIORITY (CC, No, Date): JP 200015483 000125

ABSTRACT EP 1120871 A1

The temperature dependency of an EDFA is compensated in a wavelength of 1570 to 1600 nm to realize a wavelength division multiplexing transmission. First and second long period gratings different in grating period from each other are formed in an optical fiber. The peak wavelength of the waveform of the **light** transmission loss characteristic of the first long period grating is formed on the shorter wavelength side than a transmission band. The peak wavelength of the waveform of the **light** transmission loss characteristic of the second long period grating is formed on the longer wavelength side than a transmission band. The waveforms of the above respective **light** transmission loss characteristics and the peak wavelengths of the waveforms are shifted depending on the temperature, and the **light** transmission loss value on the shorter wavelength side of the transmission band is increased as the temperature becomes higher, and the **light** transmission loss value on the longer wavelength side of the transmission band increases as the **temperature** becomes **lower**, to thereby compensate the temperature dependent gain characteristic of the optical **amplifier** in the gain compensation band on the shorter wavelength side and the longer wavelength side of the transmission band.

10/TI,PN,PD,PR,AB/2 (Item 2 from file: 348)

Operating method and operating apparatus for a high pressure discharge lamp
Verfahren und Gerat zur Versorgung einer Hochdruckentladungslampe
Methode et dispositif pour alimenter une lampe a decharge a haute pression
PATENT (CC, No, Kind, Date): EP 837620 A2 980422 (Basic)
EP 837620 A3 990602
EP 837620 B1 030319
PRIORITY (CC, No, Date): JP 96276749 961021

ABSTRACT EP 837620 A2

A method and apparatus for operating a high pressure discharge lamp is disclosed. Oscillation in the discharge arc periphery, a problem that occurs with high frequency operation, is eliminated. A high pressure discharge lamp is operated by applying thereto a dc or rectangular wave current to which is superposed an ac component shaped by a high frequency ripple signal that has been amplitude modulated by a modulation signal for inducing instantaneous fluctuations in the power supply input to both ends of the arc gap. The ripple level is thereby temporally varied, and stable operating is possible even exceeding the ripple level at which oscillation in the arc periphery begins.

10/TI,PN,PD,PR,AB/3 (Item 3 from file: 348)

Optical information recording and/or reproducing apparatus and method
Vorrichtung und Verfahren zur optischen Aufzeichnung und/oder Wiedergabe von Information
Appareil et procede d'enregistrement et/ou de reproduction optique d'information

PATENT (CC, No, Kind, Date): EP 762400 A1 970312 (Basic)
EP 762400 B1 020130
PRIORITY (CC, No, Date): JP 95221956 950830

ABSTRACT EP 762400 A1

Recording of information is performed by selectively forming a high-temperature level state and a low-temperature level state on a recording medium which is capable of an optical modulation overwrite operation to multi-value power levels on the basis of a multi-pulse recording waveform. A power level PHth of the light beam immediately before the high-temperature level state begins to be formed on the medium is detected and a minimum power level PLmin of the light beam, which can form the low-temperature level state on the medium, is detected. Then, the multi-pulse recording waveform is switched on the basis of the detected power levels PHth and PLmin. Upon recording of a non-overwrite recording medium, a power level Pth of the light beam immediately before recording begins on the medium is detected and a maximum reproduction power level Prmax of the light beam at which information recorded on the medium is not erased is detected. Then, the multi-value recording waveform is switched on the basis of the detected power levels Pth and Prmax.

10/TI,PN,PD,PR,AB/4 (Item 4 from file: 348)

Write test method for pit edge recording method and optical information recording/reproducing apparatus utilizing the same test method
Testverfahren fur ein auf Pitlangenmodulation basierendes Aufzeichnungsverfahren und optisches Informationsaufzeichnungs-/wiederg abegerat welches dieses Testverfahren benutzt
Methode de test d'ecriture pour methode d'enregistrement basee sur une modulation de la distance entre des bords de pits et appareil d'enregistrement/reproduction utilisant la methode de test

PATENT (CC, No, Kind, Date): EP 725397 A2 960807 (Basic)
EP 725397 A3 961227
EP 725397 B1 990915
PRIORITY (CC, No, Date): JP 9514099 950131; JP 95182613 950719; JP 95182614 950719

ABSTRACT EP 725397 A3

A write test method for use in a recording process for recording information is effected by such that the power of a **laser light** is modulated to form a high-temperature state and a **low-temperature** state on a recording medium. First, a predetermined signal is recorded on the recording medium while varying the power level of the **laser light**. The information recorded on the recording medium is reproduced to detect the power level of the **laser light**, immediately before formation of the high-temperature state, based on the **amplitude** of a reproduced signal. The power levels of the **laser light** for forming the **low-temperature** state and for forming the high-temperature state are determined on the basis of the detected power level. (see image in original document)

10/TI,PN,PD,PR,AB/5 (Item 5 from file: 348)

Discharge lamp-lighting apparatus
Beleuchtungsgerat mit Entladungslampe
Appareil d'eclairage a lampe a decharge
PATENT (CC, No, Kind, Date): EP 713352 A2 960522 (Basic)
EP 713352 A3 970312
EP 713352 B1 011017
PRIORITY (CC, No, Date): JP 94285015 941118; JP 94291045 941125; JP 9527074 950215; JP 95215834 950824

ABSTRACT EP 713352 A2

An apparatus realizes the straight discharge arc during the whole lighting period , as well as provides a discharge lamp-lighting apparatus which can form a plurality of luminous intensity distribution patterns by changing the shape of the discharge arc. by supplying the lighting waveform having the acoustic resonance frequency component which excites the mode to make the discharge arc straight, which is determined by the sound velocity in the discharge space medium and the length of the section orthogonal to the electrode axis to the discharge lamp, the shape of the discharge arc at the time of rated lighting can be made substantially straight, and by supplying the lighting waveform which amplifies the amplitude of the compressional wave emitted from the discharge arc during the period when the vapor pressure of the filler of the discharge lamp is low , which is the lighting waveform having the acoustic resonance frequency component changing according to the change of the lamp characteristics , the shape of the discharge arc can be made straight during the whole lighting period, and by changing the ratio of the acoustic resonance frequency component, the shape of the discharge arc can be changed. (see image in original document)

10/TI,PN,PD,PR,AB/6 (Item 6 from file: 348)

Microwave processing equipment.
Mikrowellenverarbeitungsanlage.
Appareil de reproduction des microondes.
PATENT (CC, No, Kind, Date): EP 503624 A1 920916 (Basic)
EP 503624 B1 950816
PRIORITY (CC, No, Date): JP 9149341 910314

ABSTRACT EP 503624 A1

Novel microwave processing equipment comprising a silicon single crystal (1) containing neutral (110) planar four vacancies, a cooling mechanism (3, 4, 5, 7) for holding the silicon single crystal to a **low temperature**, a **light** pumping mechanism (8-10) for irradiating **light** to the silicon single crystal, a magnetic field applying means (11) for applying a static magnetic field to the silicon single crystal (1), an orientation holding mechanism (2) for holding the silicon single crystal (1) to specific orientation with respect to the static magnetic field, an electromagnetic wave inputting mechanism (6, 12, 15, 17, 21) for supplying an input electromagnetic wave to the silicon single crystal, and an electromagnetic wave outputting mechanism (6, 12, 16, 18, 21) for extracting an output electromagnetic wave from the silicon single crystal. The input electromagnetic wave supplied in the silicon single crystal (1) by the electromagnetic wave inputting mechanism (6, 12, 15, 17, 21) is **amplified** by the stimulated emission produced in the silicon single crystal (1) and passes through the electromagnetic wave outputting mechanism (6, 12, 16, 18, 21) and is outputted to the outside. Thereby a microwave **amplifier** with narrow band width capable of **amplifying** the electromagnetic wave in the microwave range with low noise is obtained. (see image in original document)

10/TI,PN,PD,PR,AB/7 (Item 7 from file: 348)

Laser power monitor.
Laserleistungsuberwacher.
Moniteur pour controler la puissance d'un laser.
PATENT (CC, No, Kind, Date): EP 285400 A2 881005 (Basic)
EP 285400 A3 901212
PRIORITY (CC, No, Date): US 32862 870331

ABSTRACT EP 285400 A2
A power monitor (11) for monitoring the power output of a laser comprises a metal sensor disk (19) and two sets of semiconductor sensors (25, 27). The semiconductor sensors are mounted directly on the metal disk on the side of the disk opposite to that which receives the output power beam of the laser. The first, hot semiconductors sensors (25) are mounted in a circular pattern around an inner, hot region of the metal disk. The second, cold semiconductor sensors (27) are mounted directly onto the metal sensor disk in an outer, cold region which is maintained at a uniform temperature by a heat sink (31). The semiconductor sensors produce linear current outputs which are exactly proportional to the sensed temperature in degrees Kelvin. An amplifier is associated with the two sets of semiconductor sensors for detecting the temperature gradient between the inner, hot region and the outer, cold region of the metal disk. The amplifier is effective to indicate the output power of the laser as a function of that temperature difference.

10/TI,PN,PD,PR,AB/8 (Item 8 from file: 348)

Lasers and amplifiers.
Laser und Verstarker.
Lasers et amplificateurs.
PATENT (CC, No, Kind, Date): EP 281222 A1 880907 (Basic)
PRIORITY (CC, No, Date): GB 8703254 870212

ABSTRACT EP 281222 A1
Optical fibres comprised of a halide glass incorporating colour centres, for example fluoride fibres, can behave as a **laser** or an **amplifier** when maintained at a **low temperature**, typically 77(degree)K, and optically pumped. A **laser** may be comprised by a length of such a fibre (1) wound on a spool (2) and disposed in liquid nitrogen (4), the ends of the fibre are outside of the coolant and associated with input and output mirrors (5,6) which define the extremities of a lasing cavity. An optical pumping signal (7) is provided by a **laser** (8), for example a Krypton ion **laser** operating in the visible range. The output of the fibre **laser** is in the infra-red. Higher gain than with conventional colour centre **lasers** is achieved due to the longer interaction length and cooling problems are overcome.

10/TI,PN,PD,PR,AB/9 (Item 9 from file: 348)

Magnetometer using a josephson device.
Magnetometer mit Josephson-Element.
Magnetometre avec un element Josephson.
PATENT (CC, No, Kind, Date): EP 280282 A2 880831 (Basic)
EP 280282 A3 900613
EP 280282 B1 930728
PRIORITY (CC, No, Date): JP 8742552 870227

ABSTRACT EP 280282 A2

A SQUID for detecting a weak magnetic field is constructed of a sensor coil (104) which detects a signal magnetic flux, and a superconducting loop (103) which is magnetically coupled with the sensor coil (104) to generate a periodic voltage corresponding to an interlinking magnetic flux from the sensor coil (104). The periodic voltage from the SQUID is **amplified**, and is taken out. The periodic voltage taken out is synchronously detected by a phase-sensitive detecting **amplifier** (109). The synchronously-detected signal is converted into a **light** signal, which is fed back to the SQUID (103, 104). The **light** signal fed back is converted into an electric signal by a superconducting phototransistor (106) which is arranged in a **cryogenic** atmosphere (101). A magnetic flux corresponding to the electric signal from the superconducting phototransistor (106) is fed back to the superconducting loop (103) by a feedback coil.

10/TI,PN,PD,PR,AB/10 (Item 1 from file: 349)

RMS VOLTAGE CONTROL
COMMANDE DE TENSION EFFICACE
Patent and Priority Information (Country, Number, Date):
Patent: WO 200284419 A1 20021024 (WO 0284419)
Priority Application: US 2001836708 20010417

English Abstract
A control system and method (400) for supplying a constant RMS voltage to a load (402) includes a outer control loop (404) for monitoring a characteristic variable of the system and an inner control loop (406) for maintaining the power delivered to the load as a function of the received input power. A pulse width modulator (PWM) (409) coupled to both control loops delivers a pulse representative of an unregulated input voltage duty cycle. The inner control loop compares the duty cycle of the input voltage with a duty cycle of the pulse representation and generates a control signal to the PWM accordingly.

10/TI,PN,PD,PR,AB/11 (Item 2 from file: 349)

FAMILY 74 XYLOGLUCANASES
XYLOGLUCANASES DE LA FAMILLE 74
Patent and Priority Information (Country, Number, Date):
Patent: WO 200277242 A2-A3 20021003 (WO 0277242)
Priority Application: DK 2001504 20010327

English Abstract
Xyloglucanases belonging to family 74 of glycosyl hydrolases are derived from the genus Jonesia, especially from the strain Jonesia sp, DSM 14140. It is contemplated that the xyloglucanases exhibit high performance in conventional detergent compositions.

10/TI,PN,PD,PR,AB/14 (Item 5 from file: 349)

MAGNETO OPTICAL RECORDING MEDIUM, MANUFACTURING METHOD FOR THE SAME, AND METHOD AND APPARATUS FOR READING THE SAME

SUPPORT MAGNETO-OPTIQUE D'ENREGISTREMENT, PROCEDE DE FABRICATION ASSOCIE, ET PROCEDE ET DISPOSITIF DE LECTURE DE CE SUPPORT

Patent and Priority Information (Country, Number, Date):
Patent: WO 200193259 A1 20011206 (WO 0193259)
Priority Application: JP 2000163775 20000531

English Abstract

A magneto optical recording medium capable of stable recording and readout using a DWDD system is provided. The magneto optical recording medium of the present invention comprises an optical disk substrate (11) and a multilayer recording film comprising essentially a readout layer (13), an intermediate layer (14), and a recording layer (15) successively formed on top of the substrate. The readout layer has a smaller magnetic domain wall coercivity than the recording layer. The intermediate layer comprises a magnetic layer whose Curie temperature is lower than the readout layer and the recording layer. A recorded/readout magnetic domain corresponding to recorded/readout information is formed only in a groove (2a) area of the optical disk substrate. The thickness of the recording film at the boundary (3a) between mutually adjacent recording track areas is smaller than the thickness of the recording film in the center portions of the recording track areas.

10/TI,PN,PD,PR,AB/15 (Item 6 from file: 349)

PIGMENTS HAVING A VIEWING ANGLE DEPENDENT SHIFT OF COLOR, METHOD OF MAKING, USE AND COATING COMPOSITION COMPRISING OF SAID PIGMENTS AND DETECTING DEVICE

PIGMENTS PRESENTANT UN DEPLACEMENT DE COULEUR DEPENDANT DE L'ANGLE DE VISUALISATION, PROCEDE SERVANT A FABRIQUER CES PIGMENTS, UTILISATION DE CES PIGMENTS DANS DES DOMAINES DE SECURITE, COMPOSITION DE REVETEMENT CONTENANT CES PIGMENTS ET DISPOSITIF DE DETECTION

Patent and Priority Information (Country, Number, Date):
Patent: WO 200160924 A2-A3 20010823 (WO 0160924)
Priority Application: EP 2000103177 20000216

English Abstract
The invention describes luminescent optically variable pigments (OVP), methods for obtaining such pigments, as well as the use of such pigments as security elements in inks, coatings and articles. The luminescence centers are preferably incorporated into the dielectric material of the OVP's optical Fabry-Perot resonance cavity, allowing for the machine-discrimination of luminescent OVP from simple mixtures of luminescents and non-luminescent OVP.

10/TI,PN,PD,PR,AB/16 (Item 7 from file: 349)

MEDICAL DEVICE
DISPOSITIF MEDICAL
Patent and Priority Information (Country, Number, Date):
Patent: WO 200141674 A1 20010614 (WO 0141674)
Priority Application: SE 994454 19991207; SE 994747 19991223; SE 2000285 20000131

English Abstract
The present invention relates to a medical device with improved biological properties for an at least partial contact with blood, bodily fluids and/or tissues when introduced in a mammalian body, which device comprises a core and a nucleic acid present in a biologically compatible medium. Said nucleic acid encodes a translation or transcription product, which is capable of promoting endothelialisation in vivo at least partially on a synthetic surface of said core. The present invention also relates to a method of producing a medical device according to the invention. Further, the present invention also relates to a method of improving a mammalian, preferably human, body's biocompatibility with a synthetic surface, which method comprises introducing a device according to the invention in the body with an at least partial contact with blood, bodily fluids and/or tissues and administering a nucleic acid present in a biologically compatible medium to the surroundings thereof. Said nucleic acid encodes a translation or transcription product capable of promoting endothelialisation in vivo at least partially on said synthetic surface. The administration of nucleic acid may in alternative embodiments be performed before, simultaneously as or after the introduction of the device in a body. In addition, combinations of these embodiments are also encompassed.

10/TI,PN,PD,PR,AB/17 (Item 8 from file: 349)

MEDICAMENT DISPENSER
DISTRIBUTEUR DE MEDICAMENTS
Patent and Priority Information (Country, Number, Date):
Patent: WO 200141846 A1 20010614 (WO 0141846)
Priority Application: GB 9929281 19991211; GB 20004359 20000225; GB 200011124 20000510; GB 200025751 20001020; GB 200026648 20001031

English Abstract
There is provided a medicament dispenser comprising a body (44), a medicament container and transport means to transport a metered amount of medicament from a rest position to a delivery position wherein the transport means comprises a transport coupling (72). The coupling (72) is reversibly deformable in response to the application of non-mechanical energy thereto. The non-mechanical energy may comprise heat energy, electrical current energy, electrical field energy or magnetic field energy.

10/TI,PN,PD,PR,AB/18 (Item 9 from file: 349)

METHOD OF MANUFACTURING A PLURALITY OF COMPLETE INTEGRATED OPTICAL DEVICES
PROCEDE DE FABRICATION DE PLUSIEURS DISPOSITIFS OPTIQUES ENTIEREMENT INTEGRES

Patent and Priority Information (Country, Number, Date):
Patent: WO 200138916 A1 20010531 (WO 0138916)
Priority Application: EP 99203900 19991122; US 99167016 19991123

English Abstract
A method of manufacturing integrated optical devices (19) comprising optical ports aligned with and connected to optical fibres, said method comprising the steps of: a) forming in a wafer (1) a plurality of integrated optical devices; b) arranging a first group of optical fibres (13) into a first supporting element (10) so that end faces of the optical fibres are arranged in a position which substantially corresponds to the position of the ports of the integrated optical devices formed in the wafer (1); c) arranging the side faces of said first supporting element (10) and of said wafer (1) in front of each other so that the optical fibres (13) are aligned with the ports of the wafer (1); d) connecting the side faces (2, 15), thus arranged; e) separating from one another said integrated optical devices formed in said wafer (1), with the respective optical fibres (13) connected to them, so as to obtain a plurality of complete integrated optical devices (19).

10/TI,PN,PD,PR,AB/19 (Item 10 from file: 349)

METHODS AND COMPOSITIONS RELATING TO SODIUM CHANNEL BETA1A SUBUNITS
PROCEDES ET COMPOSITIONS RELATIFS AUX SOUS-UNITES beta1A DE CANAUX SODIQUES
Patent and Priority Information (Country, Number, Date):
Patent: WO 200123571 A1 20010405 (WO 0123571)
Priority Application: US 99156837 19990930

English Abstract
The present invention describes a novel subunit of voltage-gated sodium channels. This subunit is a splice variant of the beta subunit of sodium channels that encodes a novel protein. Methods and compositions for using these nucleic acids and proteins of this subunit are described.

10/TI,PN,PD,PR,AB/23 (Item 14 from file: 349)

INFRARED RADIATION SOURCE AND ITS APPLICATION FOR GAS MEASUREMENT
SOURCE DE RAYONNEMENT INFRAROUGE ET SON UTILISATION POUR LA MESURE D'UN GAZ
Patent and Priority Information (Country, Number, Date):
Patent: WO 200004351 A2 20000127 (WO 0004351)
Priority Application: NO 983334 19980717; NO 983335 19980717

English Abstract
Electrically pulsed infrared radiation source made from a thin foil-shaped material, which may be operated as required with temperature amplitudes of 100 K or more at millisecond pulse lengths. The source may be manufactured from known materials, and may be mounted in a preferred design as a curve-shaped bridge between two fixtures. The radiation source is particularly well adapted to be used in connection with pulse based methods and sensors for identification, measurement and warning of gas occurences by means of infrared radiation. Examples of such methods and sensors are included in the invention.

10/TI,PN,PD,PR,AB/24 (Item 15 from file: 349)

OXYGENASE ENZYMES AND SCREENING METHOD
ENZYMES OXYGENASE ET PROCEDES DE DETECTION

Patent and Priority Information (Country, Number, Date):
Patent: WO 9960096 A2-A3 19991125
Priority Application: US 9886206 19980521; US 9894403 19980728; US 98106834 19981103; US 98106840 19981103; US 99246451 19990209

English Abstract
A method for detecting the presence of an oxygenated compound which is produced when a substrate is reacted with an oxygenase for the substrate. The method involves reacting a coupling enzyme with the oxygenated compound to form a polymeric oxygenated compound which is fluorescent or luminescent. Measurement of the fluorescence or luminescence of the polymeric oxygenated compound provides indirect detection of the oxygenated compound produced by reaction of the oxygenase with the substrate. The method is carried out in a whole cell environment wherein the cell is transformed to express both the oxygenase being screened and the coupling enzyme. The method can be used to measure the activity of monooxygenases and dioxygenases on aromatic substrates. The method is amenable to large scale screening of enzyme mutants to isolate those with maximum oxygenase activity.

29/3,AB/24 (Item 2 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

05928357 Genuine Article#: XH055 Number of References: 44
Title: Nonlinear propagation of optical pulses of a few oscillations duration in dielectric media (ABSTRACT AVAILABLE)
Author(s): Kozlov SA (REPRINT) ; Sazonov SV
Corporate Source: ST PETERSBURG STATE INST PRECIS MECH & OPT,/ST PETERSBURG 197101//RUSSIA/ (REPRINT); ASTRAKHAN STATE TECH UNIV,/ASTRAKHAN 414025//RUSSIA/
Journal: JOURNAL OF EXPERIMENTAL AND THEORETICAL PHYSICS, 1997, V84, N2 (FEB), P221-228
ISSN: 1063-7761 Publication date: 19970200
Publisher: AMER INST PHYSICS, CIRCULATION FULFILLMENT DIV, 500 SUNNYSIDE BLVD, WOODBURY, NY 11797-2999
Language: English Document Type: ARTICLE
Abstract: Using a semi-phenomenological model of the polarization response of an isotropic solid dielectric that does not resort to the slowly-varying-envelope approximation, we have obtained a nonlinear wave equation for the electric field of a femtosecond %%%light%%% pulse propagating in the given dielectric. Evidence is presented that this equation possesses breatherlike solutions in the region of anomalous group dispersion and does not have any solutions in the form of steady-state traveling solitary video pulses. A universal relation is found linking the minimum possible duration of a breatherlike pulse with the medium parameters. It is shown that such a pulse contains roughly one and a half periods of the %%%light%%%-wave. (C) 1997 American Institute of Physics.

29/3,AB/25 (Item 3 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

02891769 Genuine Article#: MN136 Number of References: 27
Title: IMPLEMENTATIONS OF SMART PIXELS FOR OPTOELECTRONIC PROCESSORS AND INTERCONNECTION SYSTEMS .1. OPTOELECTRONIC GATE TECHNOLOGY (Abstract Available)
Author(s): YU S; FORREST SR
Corporate Source: PRINCETON UNIV,DEPT ELECT ENGN,ADV TECHNOL CTR PHOTON & OPTOELECTR MAT ATCPO/PRINCETON//NJ/08544
Journal: JOURNAL OF LIGHTWAVE TECHNOLOGY, 1993, V11, N10 (OCT), P1659-1669
ISSN: 0733-8724
Language: ENGLISH Document Type: ARTICLE
Abstract: Smart pixels are an emerging technology for implementing optical interconnections and optoelectronic computing systems. We have studied several of the common approaches to smart pixel technology, including smart pixels based on optoelectronic integrated circuits and self-electrooptic effect devices (SEED's). In this first of two papers (Part I), an optoelectronic NOR gate pixel consisting of an output %%%laser%%% diode, two input photodetectors, and a transistor circuit is analyzed for the purpose of investigating overall two-dimensional (2D) interconnection and processing system performance. We then analyze and discuss the major pixel performance issues. The results show that the optoelectronic logic gate has the advantages of low noise (typically approximately -35dBm), high bandwidth (> 1 GHz), and %%%low%%% %%%temperature%%% sensitivity while its power dissipation is about 5 mW, resulting in a moderate pixel packing density of 200/cm2 for a total chip power dissipation of 1 W/cm2. In the subsequent paper (Part II), we analyze a similar SEED-based logic element and compare its performance to the optoelectronic approach studied here.

29/3,AB/26 (Item 4 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

02677331 Genuine Article#: LV422 Number of References: 35
Title: HIGH-POWER CO %%%LASERS%%% IN RUSSIA (Abstract Available)
Author(s): IONIN AA
Corporate Source: PN LEBEDEV PHYS INST/MOSCOW//RUSSIA/
Journal: KVANTOVAYA ELEKTRONIKA, 1993, V20, N2 (FEB), P113-122
ISSN: 0368-7147
Language: RUSSIAN Document Type: ARTICLE
Abstract: Investigation, production and application of CO %%%lasers%%% in Russia is reviewed. At present, in numerous laboratories various kinds of cw, pulse and pulse-periodic CO %%%lasers%%% have been developed. Continuous sealed-off CO %%%lasers%%% with water cooling and generation power over 5-10 W, excited by self-sustained electric discharge, are successfully manufactured and used in electronics devices and in medicine. The generation power of the fast-flow cw %%%cryogenic%%% CO %%%laser%%% with self-sustained discharge reaches approximately 1 kJ. The application of electro-ionisation (EI) pumping has led to the creation of pulsed EI CO %%%lasers%%% with approximately 1 kJ energy and cw and pulsed-periodic EI CO %%%lasers%%% with 10 kW power and efficiency of approximately 40 %. The investigations of pulsed EI CO %%%lasers%%% laid the foundation for the creation of CO %%%laser%%% ''master generator - amplifier'' and systems such as pulse-periodic CO %%%lasers%%%. A %%%laser%%% system with 200 J energy and radiation angular divergence of 2.10(-4) rad has been constructed. The requirements on the efficient %%%amplification%%% in the active %%%medium%%% and the transportation of CO %%%laser%%% multifrequency pulses with various spectral and temporal properties through the air have been set. Supersonic EI CO %%%laser%%% with the peak power of 10(5) W and a pulse-periodic EI CO 10 kW %%%laser%%% with the flow speed lower than sound speed generating approximately 100 J pulses with a repetition rate of up to 100 Hz have been made. EI CO-%%%lasers%%% with the %%%laser%%% mixture injection in the liquid state and those with nuclear ionization are developed.

29/3,AB/27 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus

04493576 JICST ACCESSION NUMBER: 00A0150911 FILE SEGMENT: JICST-E
Design of an Apparatus for Verification of Formation of Bioorganic Compounds on the Exposed Facility of JEM.
HASHIMOTO HIROFUMI (1); USHIO KENTARO (2); ISHIKAWA YOJI (3); OSHIMA TAIRO (4); BRACK A (5); COLANGELI L (6); GREENBERG J M (7); HORNECK G (8); RAULIN F (9)
(1) Univ. of Tsukuba; (2) Yokohama Natl. Univ.; (3) Ohbayashi Corp.; (4) Tokyo Coll. of Pharm.; (5) Cnrs; (6) Capodimonte Ao; (7) Leiden Univ.; (8) Dlr; (9) Paris Univ.
Uchu Kagaku Gijutsu Rengo Koenkai Koenshu(Proceedings of the Space Sciences and Technology Conference), 1999, VOL.43rd, PAGE.923-928, FIG.1, REF.6
JOURNAL NUMBER: S0277ACS
UNIVERSAL DECIMAL CLASSIFICATION: 575.858
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Conference Proceeding
ARTICLE TYPE: Short Communication
MEDIA TYPE: Printed Publication
ABSTRACT: A conceptual design was developed for a cosmobiology experiment. It is intended to expose simulated interstellar ice materials deposited on dust grains to the space environment. The experimental system consists of a %%%cryogenic%%% system to keep solidified gas sample, an optical %%%device%%% to select and %%%amplify%%% the ultraviolet part of the solar %%%light%%% for irradiation, and an analytic system for investigation of products in the ice. Hardware components and the specifications were also defined in order to achieve the scientific objectives of this experiment. Requirements for interface between the system and JEM were shown. (author abst.)

29/3,AB/28 (Item 2 from file: 94)
DIALOG(R)File 94:JICST-EPlus

03948660 JICST ACCESSION NUMBER: 99A0198854 FILE SEGMENT: JICST-E
A Conceptual Design for Cosmo-biology Experiments in Earth's Orbit.
HASHIMOTO H (1); GREENBERG M (2); BRACK A (3); COLANGELI L (4); HORNECK G (5); NAVARRO-GONZALEZ R (6); RAULIN F (7); KOUCHI A (8); KOBAYASHI K (9)
(1) Univ. Tsukuba, Ibaraki, Jpn; (2) Univ. Leiden, Ra Leiden, Nld; (3) Cnrs, Centre De Biophysique Moleculaire, Orleans, Fra; (4)Osservatorio Astronomico Di Capodimonte, Napoli, Ita; (5) Dlr, Koeln, Deu; (6) Univ. Nacional Autonoma De Mexico, Mexico D.f., Mex; (7) Univ. Paris 7 Et 12, Creteil, Fra; (8) Univ. Hokkaido, Hokkaido, Jpn; (9) Yokohama National Univ., Kanagawa, Jpn
Uchu Seibutsu Kagaku(Biological Sciences in Space), 1998, VOL.12,NO.2, PAGE.106-111, FIG.1, REF.8
JOURNAL NUMBER: L2173AAU ISSN NO: 0914-9201
UNIVERSAL DECIMAL CLASSIFICATION: 575.858
LANGUAGE: English COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Commentary
MEDIA TYPE: Printed Publication
ABSTRACT: A conceptual design was developed for a cosmo-biology experiment. It is intended to expose simulated interstellar ice materials deposited on dust grains to the space environment. The experimental system consists of a %%%cryogenic%%% system to keep solidified gas sample, and an optical %%%device%%% to select and %%%amplify%%% the ultraviolet part of the solar %%%light%%% for irradiation. By this approach, the long lasting chemical evolution of icy species could be examined in a much shorter time of exposure by amplification of %%%light%%% intensity. The removal of %%%light%%% at longer wavelength, which is ineffective to induce photochemical reactions, reduces the heat load to the %%%cryogenic%%% system that holds solidified reactants including CO as a constituent species of interstellar materials. Other major hardware components were also defined in order to achieve the scintific objectives of this experiment. Those are a cold trap maintained at liquid nitrogen temperature to prevent the contaminaton of the sample during the exposure, a mechanism to exchange multiple samples, and a system to perform bake-out of the sample exposure chamber. This experiment system is proposed as a candidate payload implemented on the exposed facility of Japanese Experiment Module on International Space Station. (author abst.)

29/3,AB/29 (Item 1 from file: 144)
DIALOG(R)File 144:Pascal

13062275 PASCAL No.: 97-0352746
Charge-collection characteristics of GaAs MESFETs fabricated with a %%%low%%%-%%%temperature%%% grown GaAs buffer layer: Computer simulation
MCMORROW D; CURTICE W R; BUCHNER S; KNUDSON A R; MELINGER J S; CAMPBELL A B
Naval Research Lab, Washington DC, United States
Proceedings of the 1996 IEEE Nuclear and Space Radiation Effects Conference, NSPEC (Indian Wells, CA, USA) 1996-07-15/1996-07-19
Journal: IEEE Transactions on Nuclear Science, 1996, 43 (6 Pt 1) 2904-2912
Language: English
Two-dimensional device simulations of GaAs MESFETs fabricated with a %%%low%%%-%%%temperature%%% grown GaAs (LT GaAs) buffer layer reveal a sensitive dependence of the charge-collection characteristics on various structural and operational parameters. Simulations performed for above-band-gap pulsed %%%laser%%% excitation indicate that, even when the bulk of the charge is deposited above the LT region, the improved SEU and charge-collection performance of LT GaAs devices largely is a consequence of the reduced efficiency of the carrier-induced charge-enhancement (gain) mechanism.

29/3,AB/30 (Item 1 from file: 103)
DIALOG(R)File 103:Energy SciTec

04718495 EDB-01-067740
Title: Control, monitoring and data acquisition systems in pilot plant for tritium and deuterium separation
Author(s): Retevoi, Carmen; Balteanu, Ovidiu Ioan (National Institute of Research-Development for Cryogenic and Isotopic Technologies, ICSI, PO Box 10, Str. Uzinei nr. 4, RO-1000 Rm. Valcea (Romania))
Title: Progress in %%%Cryogenics%%% and Isotope Separation - 1999. 5. ICSI Conference. Abstracts
Author(s)/Editor(s): Stefanescu, I. (National Institute of Research-Development for Cryogenic and Isotopic Technologies, ICSI, PO Box 10, Str. Uzinei nr. 4, RO-1000 Rm. Valcea (Romania))
Corporate Source: National Institute of Research-Development for Cryogenic and Isotopic Technologies, ICSI, PO Box 10, Str. Uzinei nr. 4, RO-1000 Rm. Valcea (Romania)
Sponsoring Organization: National Agency of Science, Technology and Innovation, Bucharest (Romania)
Conference Title: Progress in Cryogenics and Isotope Separation - 1999. 5. ICSI Conference
Conference Location: Caciulata - Valcea (Romania) Conference Date: 21 - 22 Oct 1999
Publisher: Rm. Valcea (Romania) National Institute of Research-Development for Cryogenic and Isotopic Technologies
Publication Date: 1999
p 58-59 (106 p)
Language: English
Abstract: To achieve the control, monitoring and data acquisition for a pilot plant for tritium and deuterium separation we have developed a system based on computer processing which transfers and treats all the data from the physical system. It consists of six basic elements: 1. a process computer ; 2. a National %%%Instruments%%% %%%Amplifier%%% /Multiplexed - SCXI 1000 with a SCXI 1100 Module with 32 differential input channels; 3. a Honeywell Digital Process Recorder - DPR 250, with 32 universal input, 12 digital input and 12 internal relays; 4. a control system for 4 throttle valves; 5. a National Instruments Data Acquisition board - AT-MIO-16XE-10, with 8 differential channels; 6. a system consisting of up to 20 digital programming current units for carbon RTD's. All the parameters from transducers, sensors and transmitters are introduced into the multiplexer and beyond into the acquisition data board. With LabVIEW soft support (National Instrument product), we made a graphic interface which displays the plant and all the parameters and their points of measure and cumulates all these data into a file. On the other hand all the pressure flow and level values are monitored by the recorder DPR 250, which has a RS232/RS485 port for PC communication. The temperatures are measured with carbon RTD's and a system comprising 20 programming current units connected by RS485 serial bus and a RS485/RS232 converter directly to the serial port of process computer. A special program makes the voltage/temperature conversion. The control system for throttle valves comprises a central unit, which communicates by RS232 bus with 4 controllers commanding 4 stepping motors. Every stepping motor is linked by a reductor to the throttle valve. This system can operate in either manual or automatic mode. The central unit can communicate with process computer via RS232 link. In this way a process computer can receive all the parameters by means of RS232/RS245 link or directly through the multiplexer and acquisition data board. The advantage of this system is that the

parameters are monitored and controlled by a single unit and if necessary the elements of this system can work separately. (authors)

29/3,AB/31 (Item 2 from file: 103)
DIALOG(R)File 103:Energy SciTec

01135150 EDB-83-035162
Title: Coumarins in the gaseous phase. III. Coumarin 6 vapor %%%laser%%% with 12% efficiency
Author(s): Logunov, O.A.; Startsev, A.V.; Stoilov, Y.Y.
Affiliation: P. N. Lebedev Physics Institute, Academy of Sciences of the USSR, Moscow
Source: Sov. J. Quant. Electron. (Engl. Transl.) (United States) v 12:6.
Coden: SJQEA
Publication Date: Jun 1982
p 755-758
Language: English
Abstract: Lasing of coumarin 6 (C6) vapor mixed with diethyl ether (tauapprox.210 /sup 0/C) was observed in the range of 520 nm for transverse pumping with the third harmonic of a neodymium %%%laser%%% (355 nm, 20 nsec, 100 mJ). The dependence of the lasing efficiency on the transmission of the resonator mirrors was used to estimate the internal losses (0.02--0.03 cm/sup -1/) and the gain in the active %%%medium%%%. The %%%amplification%%% cross section of C6 in the 520 nm range was 3.5 x 10/sup -17/ cm/sup 2/. At the beginning of a pump pulse the lasing efficiency in the optimal resonator was 15% (and the corresponding quantum efficiency was 22%), but at the end of the pulse it fell to 10%. A study was made of the mechanisms of the induced losses. The observed fall of the efficiency was mainly due to an increase in the induced absorption and the pump wavelength. Feasibility of constructing a cw C6 vapor %%%laser%%% was considered.

29/3,AB/32 (Item 3 from file: 103)
DIALOG(R)File 103:Energy SciTec

00245939 AIX-08-308751; EDB-77-083959
Title: %%%Laser%%% action in stellar envelopes
Author(s): Varshni, Y.P.; Lam, C.S. (Ottawa Univ., Ontario (Canada). Dept. of Physics)
Source: Astrophys. Space Sci. (Netherlands) v 45:1. Coden: APSSB
Publication Date: Nov 1976
p 87-97
Language: English
Abstract: It is shown that in high-temperature stars in which high speed mass loss is occurring, the rapidly recombining plasma in the stellar envelope can act as an %%%amplifying%%% %%%medium%%%. Model calculations for %%%laser%%% action in He II lambda4686, using the collisional-radiative model, are presented. Menzel's hypothesis of %%%laser%%% action in distended stellar atmospheres is shown to be fully substantiated. The relevance of these results in resolving the problem in intensity anomalies in the spectra of Wolf-Rayet stars is pointed out.

29/3,AB/33 (Item 4 from file: 103)
DIALOG(R)File 103:Energy SciTec

00154738 AIX-07-234610; EDB-76-093042
Title: Recombining plasmas as %%%laser%%% sources
Author(s): Ali, A.W.; Jones, W.W. (Naval Research Lab., Washington, D.C. (USA)); Hoelscher, J.G.A.; Schram, D.C. (eds.)
Title: Phenomena in ionized gases. Vol. I
Conference Title: 12. international conference on phenomena in ionized gases
Conference Location: Eindhoven, The Netherlands Conference Date: 18 Aug 1975
Publisher: North-Holland Publishing Co.,Amsterdam
Publication Date: 1975
p 212
Language: English
Abstract: The recombination of a dense plasma into a hydrogen-like ion introduces a potential %%%medium%%% for the %%%amplification%%% of radiation over a wide spectral range from ir to X-Rays. The recombination is a three-body process and hence favours the higher quantum levels. A time dependent calculation shows very large gains for relatively %%%cold%%% %%%temperatures%%%. The time histories of inversion densities and hence the termination of the %%%laser%%% action are controlled by the return of the plasma into equilibrium condition.

29/3,AB/34 (Item 5 from file: 103)
DIALOG(R)File 103:Energy SciTec

00144164 ERA-02-001358; EDB-76-082197
Title: Optical energy extraction from electron-beam-initiated H/sub 2/--F/sub 2/ mixtures
Author(s): Tisone, G.C.; Hoffman, J.M.
Affiliation: Sandia Laboratories, Albuquerque, New Mexico 87115
Source: J. Appl. Phys. (United States) v 47:7. Coden: JAPIA
Publication Date: Aug 1976
p 3530-3532
Language: English
Abstract: An oscillator, based on electric discharge in an SF/sub 6/-H/sub 2/ mixture and yielding 400-nsec pulses, was used to probe an HF %%%amplifying%%% %%%medium%%% produced by electron-beam initiation of H/sub 2/-F/sub 2/ mixtures. The oscillator produced 17 lines of the P/sub 1/, P/sub 2/, and P/sub 3/ transitions. The oscillator power density at the input to the amplifier was about 2 x 10/sup 4/ W/cm/sup 2/ at the time the H/sub 2/-F/sub 2/ mixture was initiated. The power gain of the amplifier was estimated to be 500. Results indicate that with 17 lines from the v'=1, v'=2, and v'=3 vibrational levels of HF, about 6% of the generated energy can be extracted by the oscillator beam. The results of the experiment have also beem compared with a model calculation. (AIP)

29/3,AB/35 (Item 6 from file: 103)
DIALOG(R)File 103:Energy SciTec

00129153 EDB-76-066689
Author(s): Dahan, C.
Title: Calculation of a CO/sub 2/--N/sub 2/--He in-flow %%%amplifying%%% %%%medium%%%
Series/Collection Title: TP No. 1975-72
Conference Title: Conference of the French Society of Physics
Conference Location: Dijon, France Conference Date: 30 Jun 1975
Publisher: Office National d'Etudes et de Recherches Aerospatiales,Hauts-de-Seine, France
Publication Date: 1975
p 14
Language: French
Abstract: The performance of a CO/sub 2/-N/sub 2/-He %%%laser%%% ionized by an electron beam is calculated. Phenomena taken into account in the calculations include energy exchange processes among the molecules of the %%%laser%%% medium, processes of excitation by electrons, and (in the case of continuous excitation) aerodynamic processes. Since the energy exchanges accompanying the %%%laser%%% effect release significant quantities of heat which must be dissipated by the flow, the traditional energy exchange equations are coupled to equations describing the flow. Several numerical results are presented concerning the evolution of the %%%laser%%% gain, of thermodynamic parameters (temperature, Mach number), and of electric parameters (electron temperature and density).

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S2	1212291	AMPLI? OR (EMITTER? OR CATHODE?)(2N)(FOLLOWER?) OR CC=B1220
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S5	12229	LO=1
S6	9921	HI=100
S7	49658	NI=POWER (In watts (W); use PO=)
S8	9	S5(S)S6(S)S7
S9	0	AU=(BACKUS, STERLING J OR BACKUS STERLING J OR BACKUS, S J OR BACKUS S J)
S10	149	AU=(KAPTEYN, HENRY C OR KAPTEYN HENRY C OR KAPTEYN H C OR KAPTEYN H C)
S11	95	AU=(MURNANE, MARGARET MARY OR MURNANE MARGARET MARY OR MURNANE M M OR MURNANE, M M)
S12	294	AU=(BACKUS, S? OR BACKUS S? OR BACKUS, S? OR BACKUS S?)
S13	587	AU=(KAPTEYN, H? OR KAPTEYN H? OR KAPTEYN H? OR KAPTEYN H?)
S14	666	AU=(MURNANE, M? OR MURNANE M? OR MURNANE M? OR MURNANE, M?)
S15	0	PO=POWER
S16	16129	S2 AND S3
S17	2291	S16 AND S1
S18	7	S17 AND S4
S19	6	RD (unique items)
S20	357	S17 AND OSCILLAT?
S21	45499	LO=10E-9:10E-3
S22	42145	HI=10E-9:10E-3
S23	8055	NI=ENERGY (In joules (J); use EN=)
S24	128	S21(S)S22(S)S23
S25	1	S3 AND S24
S26	16684	S2(3N)(APPARTUS OR INSTRUMENT? ? OR DEVICE? ? OR TOOL? ? OR MEDIUM?)
S27	263	S26 AND S3
S28	39	S27 AND S1
S29	35	RD (unique items)
S30	107	S1(5N)S2(5N)S3
S31	81	RD (unique items)
S32	78	S31 NOT S28
S33	1	S32 AND S4
S34	0	S32 AND JOULE? ?
S35	15	S31 AND OSCILLAT?
S36	3655	S2(3N)(REGENERATIV? OR MULTIPASS OR MULTI(W)PASS?)
S37	24	S36 AND S3
S38	22	S37 NOT (S28 OR S35 OR S19)
S39	19	RD (unique items)
S40	844	S9:S14
S41	4	S40 AND S3
S42	2	RD (unique items)

19/3,AB/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

6805646 INSPEC Abstract Number: A2001-03-4280W-007, B2001-02-4340G-017
Title: Improved saturation fluence for peta-**watt** CPA system in **low temperature** Yb-doped materials
Author(s): Kawanaka, J.; Nishioka, H.; Ueda, K.
Author Affiliation: Kansai Establ., JAERI, Kyoto, Japan
Conference Title: Conference on Lasers and Electro-Optics (CLEO 2000). Technical Digest. Postconference Edition. TOPS Vol.39 (IEEE Cat. No.00CH37088) p.250-1
Publisher: Opt. Soc. America, Salem, MA, USA
Publication Date: 2000 Country of Publication: USA 720 pp.
ISBN: 1 55752 634 6 Material Identity Number: XX-2000-02400
Conference Title: Conference on Lasers and Electro-Optics (CLEO 2000). Technical Digest. Postconference Edition. TOPS Vol.39
Conference Sponsor: IEEE/Lasers & Electro-Opt. Soc.; Opt. Soc. America; Quantum Electron. & Opt. Div. Eur. Phys. Soc.; Japanese Quantum Electron. Joint Group
Conference Date: 7-12 May 2000 Conference Location: San Francisco, CA, USA
Language: English
Abstract: Summary form only given. Yb-doped materials is one of the most promising materials in the next generation of a compact table-top peta-**watt laser** using a chirped pulse **amplification** system (CPA). Yb:YLF and Yb:glass are suitable for ultra-short pulse generation due to a wide emission spectral width more than 50 nm. We demonstrated a LD-pumped oscillator performance with a Yb:YLF for the first time. In the hard pumping with more than 50 kW/cm/sup 2/, **laser** gain was not around emission peak wavelength due to large reabsorption of a lower lasing level. Effective saturation fluence at **laser** wavelength, therefore, was much higher than a bulk damage threshold for a chirped pulse. The reduction of saturation fluence is an inevitable difficulty in realizing a compact LD-pumped table-top CPA system.
Subfile: A B

19/3,AB/2 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

06245944
E.I. No: EIP02527290049
Title: Tunable optical fiber pumped difference frequency **laser** sources: State-of-the-art
Author: Richter, Dirk; Fried, Alan; Tittel, Frank K.
Corporate Source: The Natl. Ctr. for Atmospheric Res., Boulder, CO 80307, United States
Conference Title: Diode Lasers and Applications in Atmospheric Sensing
Conference Location: Seattle, WA, United States Conference Date: 20020710-20020711
E.I. Conference No.: 60392
Source: Proceedings of SPIE - The International Society for Optical Engineering v 4817 2002. p 184-187
Publication Year: 2002
CODEN: PSISDG ISSN: 0277-786X
Language: English

Abstract: **Laser** based gas detection and monitoring techniques have now evolved to a mature level. Critical **laser** performance parameters include spatial beam quality, usable IR power, linear frequency tunability and stability. For continuous-wave, long-path absorption spectroscopy, the development of robust mid-infrared spectroscopic sources has led to numerous selective, sensitive and real-time gas monitoring applications. These new compact and tunable spectroscopic sources (less than 0.5 cubic feet) can be designed for efficient room-temperature operation in the 2.4 - 4.6 microns wavelength region using standard near-IR telecom **lasers** that are optically mixed in nonlinear optical materials such as periodically poled LiNbO//3 (PPLN). Wavelength multiplexing and flexible dispersion control of PPLN crystals offer convenient narrow-linewidth (100 kHz - 2 MHz), single or multiple-frequency mid-IR operation at the milli-**watt** level. This permits the sensitive detection of many molecules such as HF, HCl, CH//2O, CH//4, CO//2, CO and N//2O at their strong fundamental rotational-vibrational transitions using direct, dual-beam, 2-f and other advanced spectroscopic detection schemes. At this wavelength region, these new **laser** sources provide an ideal alternative to **cryogenically** cooled lead-salt diode **lasers**.
This paper will focus on the comparison of the two technologies with an emphasis on achieving ultra-high sensitivity in ground and airborne applications. 7 Refs.

19/3,AB/3 (Item 1 from file: 103)
DIALOG(R)File 103:Energy SciTec

02989460 EDB-91-023083
Title: Emission characteristics of a CW CO **laser** with a longitudinal discharge and **cryogenic** cooling
Author(s): Grigor'ian, G.M.; Dymshits, B.M.; Ionikh, IU.Z. (Leningradskii Gosudarstvennyi Universitet, Leningrad (USSR))
Source: Kvantovaya Ehlektronika (USSR) v 17. Coden: KVEKA
Publication Date: Jun 1990
p 669-672
Language: In Russian
Abstract: The paper investigates the effects of the energy input, the working-gas-mixture composition, and the length of the discharge zone on the energy characteristics of a gas-flow CO **laser** with a longitudinal discharge and **cryogenic** cooling. It is shown that high efficiency (at least 30 percent) can be achieved over a wide range of experimental conditions at a lasing power of hundreds of **watts** . 15 refs.

19/3,AB/4 (Item 2 from file: 103)
DIALOG(R)File 103:Energy SciTec

02347620 NOV-89-059416; EDB-89-093589
Title: Characteristics and reliability of high power **laser** diodes for solid-state **lasers** pumping
Author(s): Mamine, T.; Honda, K.; Yamaguchi, N.; Ayabe, M.; Yoneyama, O.; Bischel, W.K.; Rahn, L.A.
Affiliation: Compound Semiconductor Dept., Semiconductor Group, SONY Corp., 4-14-1 Asahi-cho, Atsugi-shi 243 (JP)
Title: Pulsed single-frequency **lasers**
Series/Collection Title: SPIE - Volume 912
Conference Title: Pulsed single frequency lasers: technology and applications

Conference Location: Los Angeles, CA, USA Conference Date: 12 Jan 1988
Publisher: SPIE Society of Photo-Optical Instrumentation Engineers,Bellingham, WA
Publication Date: 1988
p 8-12
Report Number(s): CONF-880199-
Language: English
Abstract: Performance characteristics and reliability of the GaAs/AlGaAs one-**watt laser** diode are reported. The broad area gain-guided **lasers** have threshold current in the 400 mA range. The farfield radiation angles parallel and perpendicular to the junction are 13 deg and 25 deg, respectively. With a special-designed package which has a built-in thermo electric cooler the emission wavelength can be tuned accurately. These performances are stable during a long term operation except for 1 to nm wavelength shift due to the increase of operation current in an Automatic Power Control (APC) mode. The extrapolated mean time to failure of 100 - 500 mW **laser** diodes are 20,000 hours at room temperature. A similar lifetime can be expected for the one-**watt laser** at operating **temperatures lower** than room **temperature**.

19/3,AB/5 (Item 3 from file: 103)
DIALOG(R)File 103:Energy SciTec

02339974 NOV-89-056492; EDB-89-085942
Title: Radiofrequency discharge-excited carbon monoxide **lasers**
Author(s): Pearson, G.N.; Hall, D.R.
Affiliation: Heriot-Wall Univ., Physics Dept., Optoelectronics and Laser Engineering Group, Riccarton, Edinburgh (GB)
Title: Proceedings of the conference on **lasers** and electro-optics
Series/Collection Title: 1988 Technical Digest Series, Volume 7
Conference Title: CLEO '88: OSA/IEEE conference on lasers and electro-optics
Conference Location: Anaheim, CA, USA Conference Date: 25 Apr 1988
Publisher: Optical Society of America,Washington, DC
Publication Date: 1988
p 394
Report Number(s): CONF-880402-
Language: English
Abstract: There are several potential applications for compact sealed-off CO **lasers** with cw output powers of ten of **watts**. For such applications, these **lasers** must operate efficiently without **cryogenic** cooling and with a long sealed-off lifetime. Direct-current-excited CO **lasers** operating at room temperature have recently produced output powers of 29 W m/sup -1/ and exhibited efficiencies of 15%. The authors have employed transverse rf discharge pumping to produce CO **lasers** operating sealed off at temperatures near ambient and delivering powers of 36 W m/sup -1/. They peak efficiency was also 15%, which is comparable with that obtained previously for **lasers** operating at liquid nitrogen temperatures. The **laser** was built to a very simple design analogous with that used in a previously described rf waveguide CO **laser**. The maximum multiline **laser** power the authors obtained was 14 W with a coolant temperature of -28/sup 0/C. The emission spectrum consisted of P-branch transitions between the 15--14...8--7 vibrational bands of the CO electronic ground state. **Amplitude** modulation of the rf has been used to modify the emission spectrum and produce an **amplitude** modulation of the **laser** beam. The kinetics of these processes are discussed for both broadband and grating tuned

laser resonators. In addition to the **laser** results, the authors also present results on the rf plasma characteristics, the spontaneous emission spectrum, the small-signal gain, and the saturation intensity. Knowledge of these parameters allows a comprehensive analysis of this excitation scheme.

25/3,AB/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

03846847 INSPEC Abstract Number: A91047823
Title: A cryomechanics technique to measure dissipated energies of 10 nJ
Author(s): Fuchino, S.; Iwasa, Y.
Author Affiliation: Electrotech. Lab., Ibaraki, Japan
Journal: Experimental Mechanics vol.30, no.4 p.356-9
Publication Date: Dec. 1990 Country of Publication: USA
CODEN: EXMCAZ ISSN: 0014-4851
Language: English
Abstract: A new cryomechanics measurement technique has been developed to measure fracture-induced dissipated energies as small as 10 nJ (10*10/sup -9/ J) at temperatures near 4.2 K. The technique, with much less stringent instrumentation requirements than those used for measurement of approximately 10 nJ energies, was applied to an induced fracture experiment where dissipation energies were of the order of approximately 100 mu J. Fracture of 0.5-mm diameter pencil leads of two different hardnesses gave rise to measured energies of 65 approximately 110 mu J. A two-dimensional finite-element analysis was used to interpret the experimental measurements. Based on the analysis, approximately 50 mu J of 65 approximately 110 mu J measured is estimated to be the dissipated energy associated with crack formation and propagation.

29/3,AB/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

6589048 INSPEC Abstract Number: A2000-12-4255P-038, B2000-06-4320J-098
Title: Optical characteristics and low linewidth enhancement factor in 1.2 mu m quantum dot **lasers**
Author(s): Newell, T.C.; Li, H.; Stintz, A.; Bossert, D.; Fuchs, B.; Malloy, K.J.; Lester, L.F.
Author Affiliation: Center for High Technol. Mater., New Mexico Univ., Albuquerque, NM, USA
Conference Title: 1999 IEEE LEOS Annual Meeting Conference Proceedings. LEOS'99. 12th Annual Meeting. IEEE Lasers and Electro-Optics Society 1999 Annual Meeting (Cat. No.99CH37009) Part vol.2 p.469-70 vol.2
Publisher: IEEE, Piscataway, NJ, USA
Publication Date: 1999 Country of Publication: USA 2 vol. xxviii+918 pp.
ISBN: 0 7803 5634 9 Material Identity Number: XX-1999-03442
U.S. Copyright Clearance Center Code: 0 7803 5634 9/99/$10.00
Conference Title: 1999 IEEE LEOS Annual Meeting Conference Proceedings. LEOS'99. 12th Annual Meeting
Conference Date: 8-11 Nov. 1999 Conference Location: San Francisco, CA, USA
Language: English
Abstract: The QD density of states, which theoretically is a series of delta function spikes at the quantized energy levels, indicates that threshold current densities are not only **low** but also **temperature** independent. Another important property is the degree to which carrier density variations alter the index of refraction of the active layer. Large values of dn/dN can result in antiguiding in narrow stripe **lasers** , as well as self-focusing and filamentation in broad area emitters. The latter is often described by the linewidth enhancement parameter, alpha =-4 pi / lambda (dn/dN)(dg/dN)/sup -1/. For strained InGaAs single quantum well (QW) **lasers**, operating near 980nm, the value of alpha is typically 2 or higher at carrier densities corresponding to threshold. At the communications wavelengths of 1.3 mu m and 1.55 mu m alpha is usually much higher unless modulation doping or a large number of quantum wells are employed. However, the elimination or substantial reduction a may be realized by utilizing quantum dot **lasers**. alpha values are predicted to be low and even zero for certain conditions. Since one area of great interest is the production of QD devices at 1.3 mu m, such structures may have a large applicability to wide bandwidth communications **devices** and high power **amplifiers** . We have designed, grown, and characterized quantum dot **lasers** that feature a layer of InAs quantum dots centered in a single 100 A In/sub 0.2/Ga/sub 0.8/As quantum well structure.
Subfile: A B

29/3,AB/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC

6482111 INSPEC Abstract Number: A2000-05-7847-003
Title: Resonant spin **amplification**-a new **tool** for the study of spin coherence in semiconductors
Author(s): Kikkawa, J.M.; Kirby, A.C.; Awschalom, D.D.
Author Affiliation: Dept. of Phys., California Univ., Santa Barbara, CA, USA

Conference Title: 24th International Conference on the Physics of Semiconductors p.89-96
Editor(s): Gershoni, D.
Publisher: World Scientific Publishing, Singapore
Publication Date: 1999 Country of Publication: Singapore xxvii+301 pp.
ISBN: 981 02 3613 1 Material Identity Number: XX-1998-02415
Conference Title: Proceedings of 24th International Conference on the Physics of Semiconductors
Conference Date: 2-7 Aug. 1998 Conference Location: Jerusalem, Israel
Language: English
Abstract: Time-resolved studies of electron spin precession in n-type GaAs bulk crystals reveal a dramatic increase in **low-temperature** transverse spin lifetimes within a narrow region of doping concentration. These extended lifetimes do not appear in the time-resolved photoluminescence polarization, motivating the use of Faraday rotation, an absorptive process, to study electron spin polarization in n-type systems. We discuss a recently introduced technique in which spin precession is periodically driven into resonance with the exciting **laser** cavity by adjusting the magnetic field, giving rise to a series of resonances at evenly-spaced field intervals. This method enables characterization of spin lifetimes within previously inaccessible regimes of low magnetic fields and low excitation densities. Under these circumstances, we find that spin lifetimes decrease monotonically with increased doping, and that this trend becomes non-monotonic at higher powers.
Subfile: A

29/3,AB/3 (Item 3 from file: 2)
DIALOG(R)File 2:INSPEC

6254849 INSPEC Abstract Number: A1999-13-7335-003
Title: From kilo-ohms to kilo-bytes: sequence dependent resistance and its fluctuation in a disordered quantum resistor
Author(s): Kumar, N.
Author Affiliation: Raman Res. Inst., Bangalore, India
Journal: PINSA-A (Proceedings of the Indian National Science Academy) Part A (Physical Sciences) vol.64, no.5 p.637-42
Publisher: Indian Natl. Sci. Acad,
Publication Date: Sept. 1998 Country of Publication: India
CODEN: PIPSBD ISSN: 0370-0046
SICI: 0370-0046(199809)64:5L.637:FKOK;1-B
Material Identity Number: H109-1999-002
Language: English
Abstract: For a sequence of elastic scatterers the transfer matrices are to be multiplied which, because of non-commutativity leads to total resistance becoming sequence dependent. When elastic scattering dominates, samples that are macroscopically identical but microscopically different, will have different sample specific resistances at **low temperatures** . Indeed, such a disordered quantum ohmic-resistor effectively encodes the sequence information resistively-rather provocatively it translates kilo-ohms into kilo-bytes! This demands full probability distribution of the sample specific resistance over an appropriate ensemble and there is a breakdown of the central limit theorem. Full probability distribution is determined through: (i) the method of Invariant Imbedding which is microscopic; and (ii) the Maximum Entropy Principle (MEP) which is macroscopic. It is also examined as to how the amplitude reflection (transmission) coefficient changes with the sample

length by imbedding the given sample as a sub-sample. Thus the emergent quantity is directly addressed in term of which the resistance can be expressed through the well-known Landauer formula which also satisfies the Riccati equation when the underlying equation is the wave equation, according to Professor S Chandrasekhar, the well-known astrophysicist. In the present case, a stochastic Riccati equation describing a random walk (nonlinear Langevin process) of the reflection coefficient in the complex amplitude plane is obtained. The associated Fokker-Planck equation, obtained through the van Kampen lemma, then describes the full probability distribution of the complex reflection coefficient and hence of the resistance. It leads directly to a lognormal resistance distribution, signifying non-self-averaging property of the resistance. Extension to higher dimensions is obtained approximately through a Kadanoff-Migdal RG procedure. The one-dimensional one-channel case is of practical interest for the **lightwave** transmission through a single-mode optical fibre maintaining polarization but with a random refractive index along the length. The second approach based on MEP, addresses the disordered multichannel (physical wire) problem by asking for the most probable distribution of the N*N transfer matrices assumed as random as possible subject to the constraints of pseudo-unitarity (flux conservational), time-reversal symmetry and the composition law appropriate to series combination of small segments of resistors. Through proper parametrization and use of the invariant measure appropriate to the underlying SU (N,N) group an N-dimensional diffusion equation is obtained with self-coupling for certain variables related to the resistance. For N=1, the equation reduces to that obtained by Invariant imbedding. Subsequent work by Pier A Mello has shown that this leads in a simple manner to the recently discovered universal conductance fluctuation in the metallic limit. The invariant imbedding approach to an active (coherently **amplifying**) disordered **medium** has been extended and the possibility of Mirror-Less **Laser** Action in, e.g., a rare-earth (Er) doped silica-glass optical fibre is examined.

Subfile: A

29/3,AB/4 (Item 4 from file: 2)

DIALOG(R)File 2:INSPEC

6166022 INSPEC Abstract Number: A1999-06-4265P-006, B1999-03-4340P-012

Title: Nonlinear switching in an all-semiconductor-optical-**amplifier** loop **device**

Author(s): Jiun-Haw Lee; Ding-An Wang; Hsin-Jiun Chiang; Ding-Wei Huang; Gurtler, S.; Yang, C.C.; Yean-Woei Kiang; Chen, B.C.; Shih, M.C.; Chuang, T.J.

Author Affiliation: Dept. of Electr. Eng., Nat. Taiwan Univ., Taipei, Taiwan

Journal: IEEE Photonics Technology Letters vol.11, no.2 p.236-8

Publisher: IEEE,

Publication Date: Feb. 1999 Country of Publication: USA

CODEN: IPTLEL ISSN: 1041-1135

SICI: 1041-1135(199902)11:2L.236:NSSO;1-P

Material Identity Number: M857-1999-002

U.S. Copyright Clearance Center Code: 1041-1135/99/$10.00

Language: English

Abstract: An all-semiconductor-optical-**amplifier** loop **device** with a multimode interference (MMI) coupler was fabricated with the deep UV cryo-etching technique. Efficient power-dependent switching was observed. With continuous-wave signals, nonlinear switching occurred due to the combined effect of the nonlinear coupling in the MMI coupler and the

lateral wave field redistribution caused by the loop structure. Simulation results showed good agreement in trend with the experimental data.
Subfile: A B

29/3,AB/5 (Item 5 from file: 2)
DIALOG(R)File 2:INSPEC

6150630 INSPEC Abstract Number: B1999-03-1305-003
Title: Exploring new active materials for **low**-noise room-**temperature** microwave **amplifiers** and other **devices**
Author(s): Blank, A.; Kastner, R.; Levanon, H.
Author Affiliation: Dept. of Electr. Eng.-Phys. Electron., Tel-Aviv Univ., Israel
Journal: IEEE Transactions on Microwave Theory and Techniques vol.46, no.12, pt.1 p.2137-44
Publisher: IEEE,
Publication Date: Dec. 1998 Country of Publication: USA
CODEN: IETMAB ISSN: 0018-9480
SICI: 0018-9480(199812)46:12:1L.2137:EAMN;1-L
Material Identity Number: I045-1999-001
U.S. Copyright Clearance Center Code: 0018-9480/98/$10.00
Language: English
Abstract: Newly discovered chemical systems, mainly the C/sub 60/ molecule (a molecule containing 60 carbon atoms) and porphyrin molecules (one of the basic building blocks of the hemoglobin and chlorophyll molecules) dissolved in organic solvents, have been considered as active microwave amplifying or absorbing materials. These effects are obtained under an external DC magnetic field as well as optical excitation. These materials are potentially important in certain applications in microwaves. In this paper, an attempt is made at evaluating this potential. To this end, the complex permeability of the dissolved C/sub 60/ molecules has been measured, under the aforementioned physical conditions, in three different experiments with the aid of three types of electron paramagnetic resonance (EPR) spectrometers, respectively. The permeability of the C/sub 60/ molecules, when dissolved in liquid toluene, has been found to have a negative imaginary part of about mu /sub r//sup H/=-0.0055 (i.e., attenuating for the e/sup jwt/ harmonic time dependence) over a bandwidth of 0.4 MHz around the center frequency, which is known as the Larmor frequency, and is determined by the external DC magnetic field. Alternatively, the same molecules, when dissolved in a nematic liquid crystal (LC), have either positive (amplifying) or negative (absorbing) mu /sub r//sup H/, with absolute value of about 0.005 over a bandwidth of 27 MHz. All measurements have been taken around the temperature of T=253 K. The lifetime of the phenomenon, during the time span that follows the **laser** optical excitation, is about 10 mu s. The applicability of those materials for solid state optically pumped maser amplifiers, which operate at room temperature with a very **low**-noise **temperature** or for other novel devices, is demonstrated in this paper.
Subfile: B

29/3,AB/6 (Item 6 from file: 2)
DIALOG(R)File 2:INSPEC

03249163 INSPEC Abstract Number: B88071871
Title: High-accuracy post-fabrication trimming of surface acoustic wave

devices by **laser** photochemical processing
Author(s): Dolat, V.S.; Sedlacek, J.H.C.; Ehrlich, D.J.
Author Affiliation: Lincoln Lab., MIT, Lexington, MA, USA
Journal: Applied Physics Letters vol.53, no.8 p.651-3
Publication Date: 22 Aug. 1988 Country of Publication: USA
CODEN: APPLAB ISSN: 0003-6951
U.S. Copyright Clearance Center Code: 0003-6951/88/340651-03$01.00
Language: English
Abstract: **Laser** direct writing reactions for molybdenum etching and Cr/Cr/sub 2/O/sub 3/ cermet conductivity transformation have been developed for concurrent phase and amplitude trimming of surface acoustic wave devices on LiNbO/sub 3/. The molybdenum etching reaction utilizes photolytic decomposition of Cl/sub 2/ with 488 nm **light** as a means to achieve **low** process **temperature** and avoid substrate damage. The cermet reaction utilizes a solid-state transformation in an O/sub 2/ environment to render the film highly nonattenuating to surface acoustic waves with no underlying substrate damage. These techniques have been applied to trimming of reflective array compressors and have provided order-of-magnitude improvement in phase and **amplitude** accuracy over **devices** compensated by lithographic processing.
Subfile: B

29/3,AB/7 (Item 7 from file: 2)
DIALOG(R)File 2:INSPEC

01094073 INSPEC Abstract Number: A77066987, B77033776
Title: A new optoacoustic cell with improved performance
Author(s): Patel, C.K.N.; Kerl, R.J.
Author Affiliation: Bell Labs., Murray Hill, NJ, USA
Journal: Applied Physics Letters vol.30, no.11 p.578-9
Publication Date: 1 June 1977 Country of Publication: USA
CODEN: APPLAB ISSN: 0003-6951
Language: English
Abstract: A new cell for detecting very small concentrations of atmospheric NO (10/sup 7/ mol. cm/sup -3/) is described, using 0.1 W of CW tunable power from a spin-flip **laser**; the cell incorporates miniature electret microphones with a built-in FET pre-**amplifier**. The **device** is suitable for use with diode **lasers** and is applicable to experiments at **low temperatures** and in electric and magnetic fields.
Subfile: A B

29/3,AB/8 (Item 8 from file: 2)
DIALOG(R)File 2:INSPEC

00734196 INSPEC Abstract Number: A75017055, B75009918
Title: DC voltage measurement in the nanovolt range
Author(s): Luck, R.
Journal: Archiv fur Technisches Messen & Messtechnische Praxis no.466 p.R188-92
Publication Date: Nov. 1974 Country of Publication: West Germany
CODEN: ATMPC4 ISSN: 0365-7418
Language: German
Abstract: A system for precision measurement is described, as used in the high-intensity field laboratory of Brunswick Technical University. Its main field of application is in **low-temperature** and solid-state physics. The basis of the system is a moving-coil galvanometer with the

coil floating in a liquid: the usual **light** pointer is extended by the use of a feedback **light amplifying device.**
Subfile: A B

29/3,AB/9 (Item 1 from file: 6)
DIALOG(R)File 6:NTIS

1812778 NTIS Accession Number: N94-29773/6
Miniaturization in X ray and gamma ray Spectroscopy
Iwanczyk, J. S. ; Wang, Y. J. ; Bradley, J. G.
Jet Propulsion Lab., Pasadena, CA.
Corp. Source Codes: 014828000; JJ574450
Sponsor: National Aeronautics and Space Administration, Washington, DC.
15 Jun 93 10p
Languages: English
Journal Announcement: GRAI9417; STAR3208
In Its Proceedings of the Workshop on Microtechnologies and Applications to Space Systems p 85-94.
NTIS Prices: (Order as N94-29767/8, PC A14/MF A03)
The paper presents advances in two new sensor technologies and a miniaturized associated electronics technology which, when combined, can allow for very significant miniaturization and for the reduction of weight and power consumption in x-ray and gamma-ray spectroscopy systems: (1) Mercuric iodide (HgI2) x-ray technology, which allows for the first time the construction of truly portable, high-energy resolution, non-**cryogenic** x-ray fluorescence (XRF) elemental analyzer systems, with parameters approaching those of laboratory quality **cryogenic** instruments; (2) the silicon avalanche photodiode (APD), which is a solid-state **light** sensitive **device** with internal **amplification** , capable of uniquely replacing the vacuum photomultiplier tube in scintillation gamma-ray spectrometer applications, and offering substantial improvements in size, ruggedness, low power operation and energy resolution; and (3) miniaturized (hybridized) low noise, low power amplification and processing electronics, which take full advantage of the favorable properties of these new sensors and allow for the design and fabrication of advanced, highly miniaturized x-ray and gamma-ray spectroscopy systems. The paper also presents experimental results and examples of spectrometric systems currently under construction. The directions for future developments are discussed.

29/3,AB/10 (Item 2 from file: 6)
DIALOG(R)File 6:NTIS

0616080 NTIS Accession Number: UCRL-78250/XAB
Second-Generation 1024-Channel Portable Gamma-Ray Spectrometer
McGibbon, A. L.
California Univ., Livermore. Lawrence Livermore Lab.
Corp. Source Codes: 9500007
Sponsor: Energy Research and Development Administration.
Report No.: CONF-761006-6
4 Oct 76 6p
Document Type: Conference proceeding
Journal Announcement: GRAI7710; NSA0200
Nuclear science, scintillation and semiconductor counter symposium, New Orleans, Louisiana, United States of America (USA), 20 Oct 1976.
Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and

email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.
NTIS Prices: PC A02/MF A01
Following the successful design in 1974 of a 256-channel battery-powered pulse-height analyzer system, we have completed a second-generation analyzer with advanced features, **lighter** weight, and more rugged construction. The 17-kg analyzer includes a NaI detector and is packaged as a small suitcase; it has high stability and accuracy to allow use over the temperature range from --30 to +70 exp 0 C. The waterproof unit has many features not found on any commercial unit to allow sophisticated analysis by non-electronics oriented personnel. Its 36-button keyboard will allow manipulation of multiple spectra, integrations, and expanded energy scale with readout in keV. If its self-contained SX70 display camera is not sufficient for record keeping, the unit will telemeter all data onto analog tape or send to a remote computer via phone coupler. (ERA citation 02:014565)

29/3,AB/11 (Item 3 from file: 6)
DIALOG(R)File 6:NTIS

0610526 NTIS Accession Number: AD-824 455/0/XAB
Semiconductor **Laser** Array Techniques (Semlat)
(Final rept. May 66-Sep 67)
Collins, N. E. ; Jones, J. E. ; Kim, H. B. ; Magdo, S. ; Mallory, W. R.
General Electric CO Syracuse N Y
Corp. Source Codes: 149500
Report No.: RADC-TR-67-586
Nov 67 96p
Journal Announcement: GRAI7709
See also AD-609 064.
Distribution limitation now removed. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.
NTIS Prices: PC A05/MF A01
The primary objective of the program was to determine the feasibility of a cascaded semiconductor array amplification scheme. The results of an extensive materials investigation led to a further understanding of many of the factors relating GaAs material characteristics to **laser** diode performance. A system comprised of a GaAs master oscillator **laser** driving two linear ten-diode amplifying arrays was constructed. The system was evaluated by the performance of a cascaded two-element beam amplification experiment. The results of this experiment successfully demonstrated the feasibility of coherent cascaded array amplification.

29/3,AB/12 (Item 4 from file: 6)
DIALOG(R)File 6:NTIS

0288428 NTIS Accession Number: AD-730 062/XAB
Microwave Research
(Semiannual status rept. no. 4, 1 Dec 70-31 May 71)
Stanford Univ Calif Microwave Lab
Corp. Source Codes: 229750
Report No.: ML-1973
Jun 71 80p
Journal Announcement: GRAI7121
See also Semiannual status rept. no. 3, AD-723 844.

Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.
NTIS Prices: PC A05/MF A01
The program is concerned with general research in electronics, involving materials having properties suitable for devices, with application to information processing, **cryogenic** power systems and biological instrumentation. Eight projects are included in the report: Tunable raman **laser**; Ring **laser**; Surface wave parametric systems; Monolithic surface wave amplifiers; Large time-bandwidth surface wave delay lines; Dielectric relaxation at **low temperatures**; Acoustic properties of materials; Acoustic methods for cell discrimination.

29/3,AB/13 (Item 5 from file: 6)
DIALOG(R)File 6:NTIS

0090547 NTIS Accession Number: AD-614 253/XAB
Study of Plasma Amplifiers
(Final rept)
Chow, K. K.
Microwave Associates Inc Burlington Mass
Corp. Source Codes: 888888888
Report No.: AFCRL-65-158
15 Feb 65 2p
Journal Announcement: USGRDR6511
Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.
NTIS Prices: PC A02
An investigation on the amplification of electromagnetic signals interacting with a plasma was carried out. Specifically, use of recombination radiation at optical frequencies is considered. Theoretical considerations for optical frequencies indicate that a **low temperature** plasma with high density, high degree of ionization is necessary. Thermal-contact ionization of cesium is chosen as the most suitable means. Fabrication of this plasma generator and the attendant technological problems are discussed in detail. Experimental results show that recombination radiation has been obtained in this type of plasma. However because of the low plasma density attainable, optical oscillation could not be initiated. Schemes are suggested to increase the density and degree of ionization. Studies on gas **lasers** were also carried out. Optical resonator modes in a Br2-Ar **laser** are examined in detail. Excellent agreement between experimental and theoretical results is obtained. (Author)

29/3,AB/14 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

06381796
E.I. No: EIP03207468298
Title: Material processing with a high frequency millimeter-wave source
Author: Miserendino, Scott; Lewis, D.; Imam, M.A.; Kurihara, L.K.; Fliflet, A.W.; Kinkead, A.; Egorov, S.; Bruce, R.W.; Gold, S.; Jung, A.M.
Corporate Source: Code 6320 Material Science Division Naval Research Laboratory, Washington, DC 20375, United States

Source: Materials and Manufacturing Processes v 18 n 2 March 2003. p 151-167
Publication Year: 2003
CODEN: MMAPET ISSN: 1042-6914
Language: English
Abstract: A millimeter-wave beam based on a 15-kW, continuous-wave, 83-GHz gyrotron with superconducting magnets system is being investigated for use in material processing. The millimeter-wave beam can be focused to a few millimeters and manipulated quasi-optically and has been used in the following experiments: joining of ceramics (both similar and dissimilar materials), brazing of poled piezoelectric ceramics without significant heating and depoling, and coating of metals and polymers. Joining has been done directly and with reactive brazes. In coating, the beam's short wavelength and absorption depth permit effective ceramic-coating deposition on **lower temperature** materials, e.g., polymers and metals, without significant substrate beating, and localized deposition of coatings as well. Finally, the millimeter-wave source has been used in the efficient production of nanophase metal and ceramic powders, via a greatly accelerated modified polyol process producing smaller powders of greater uniformity. The results and implications of the various experiments will be discussed with some theoretical calculations and modeling. 13 Refs.

29/3,AB/15 (Item 2 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

05932869
E.I. No: EIP01456715802
Title: Near diffraction limited 100 TW-10 Hz femtosecond **laser** new approaches towards ultra-high intensities
Author: Pittman, M.; Rousseau, J.P.; Notebaert, L.; Ferre, S.; Chambaret, J.P.; Cheriaux, G.
Corporate Source: Laboratoire d'Optique Appliquee Ecole Natl. Sup. de Tech. Avancees Ecole Polytechnique, 91761 Palaiseau Cedex, France
Conference Title: Conference on Lasers and Electro-Optics (CLEO)
Conference Location: Baltimore, MD, United States Conference Date: 20010506-20010511
E.I. Conference No.: 58609
Source: Conference on Lasers and Electro-Optics Europe - Technical Digest 2001. p 72-73
Publication Year: 2001
CODEN: 85PNA9
Language: English
Abstract: A femtosecond **laser** system was developed to deliver pulses with a flat spectral phase over a 45 nm wide spectrum. The **laser** chain was composed of a Kerr-lens-mode-locked Ti:Sa oscillator delivering 80 Mhz/300 mW and a pulse train with spectrum of 65 nm full width at half maximum (FWHM). An acousto-optic programmable dispersive filter (AOPDF) was used to reshape the input spectrum. The Ti:Sa crystal was cooled to **cryogenic** temperature to prevent thermal lens effects and increase the thermal conductivity. It was found that chirped pulse amplification method reduced the nonlinear effects, spectral and spatial distortions. (Edited abstract) 5 Refs.

29/3,AB/16 (Item 3 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

05613403

E.I. No: EIP00085272119
Title: **Temperature sensor** based on fiber Bragg grating
Author: Protopopov, V.N.; Karpov, V.I.; Medvedkov, O.I.; Vasiliev, S.A.; Grekov, M.V.; Dianov, E.M.; Palto, S.P.
Corporate Source: Russian Acad of Sciences, Moscow, Russia
Source: Proceedings of SPIE - The International Society for Optical Engineering v 4083 2000. p 224-228
Publication Year: 2000
CODEN: PSISDG ISSN: 0277-786X
Language: English
Abstract: A **fiber**-optic **temperature** sensor using an in-fiber Bragg grating as the sensitive element has been developed. The resulting sensor is intended for measuring the temperature of remote objects at a distance of up to 1 km in the presence of strong electromagnetic fields. The sensor provides an accuracy of plus or minus 1 degree C and a resolution of 0.1-0.2 degree C. 6 Refs.

29/3,AB/17 (Item 4 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

05280780
E.I. No: EIP99054670572
Title: GaAs preamplifier and LED driver for use in **cryogenic** and highly irradiated environments
Author: Christoforou, Y.; Rossetto, O.
Corporate Source: Inst des Sciences Nucleaires de Grenoble, Grenoble, Fr
Source: Nuclear Instruments & Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment v 425 n 1 Apr 1 1999. p 347-356
Publication Year: 1999
CODEN: NIMAER ISSN: 0168-9002
Language: English
Abstract: A low-power dissipation, fast response and reasonable noise performance GaAs MESFETs preamplifier, able to work at **low temperatures** (89 K) and under high radiation doses, is presented. Attention is given to noise modeling for an application to particle detectors front-end electronics. Noise optimization can be achieved through careful layout design of the preamplifier's input transistor. This preamplifier is intended to be followed by a GaAs LED driver both working under the same physical conditions. A GaAs preamplifier and LED driver circuit has been designed and test results are presented and discussed in this paper. (Author abstract) 22 Refs.

29/3,AB/18 (Item 5 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

04245078
E.I. No: EIP95092851802
Title: Tensile-strained GaAsP/AlGaAs quantum wells grown by low-pressure metalorganic vapor phase epitaxy
Author: Pan, Wugen; Yaguchi, Hiroyuki; Onabe, Kentaro; Ito, Ryoichi; Shiraki, Yasuhiro
Corporate Source: Univ of Tokyo, Tokyo, Jpn
Source: Journal of Applied Physics v 78 n 5 Sep 1 1995. p 3517-3519
Publication Year: 1995
CODEN: JAPIAU ISSN: 0021-8979
Language: English

Abstract: The photoluminescence study of tensile-strained GaAs//0//.//8//9P//0//.//1//1/Al//0//.//3//3Ga//0//.//6//7As quantum wells (QW) grown by low-pressure metalorganic vapor phase epitaxy (MOVPE) is reported. The well width of 60 angstrom is the coincident or reversal point of the **light**- and heavy-hole transition energies, which has potential application for polarization-independent **devices** such as optical **amplifiers**. The experimental results are consistent with the calculations. 13 Refs.

29/3,AB/19 (Item 6 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

04204989
E.I. No: EIP95072768750
Title: Monolithic integration of an x-band circulator with GaAs MMICs
Author: Adam, J.D.; Buhay, H.; Daniel, M.R.; Driver, M.C.
Corporate Source: Westinghouse Science and Technology Cent, Pittsburgh, PA, USA
Conference Title: Proceedings of the 1995 IEEE MTT-S International Microwave Symposium. Part 1 (of 3)
Conference Location: Orlando, FL, USA Conference Date: 19950516-19950520
E.I. Conference No.: 43220
Source: IEEE MTT-S International Microwave Symposium Digest v 1 1995. IEEE, Piscataway, NJ, USA,95CH3577-4. p 97-98
Publication Year: 1995
CODEN: IMIDDM ISSN: 0149-645X
Language: English
Abstract: Monolithic integration of circulators with GaAs MMICs offers the potential of lower cost, reduced size and improved uniformity over the present hybrid approaches. Development of MMIC compatible ferrite film deposition techniques, device design and fabrication will be described. Results on ferrite film circulators deposited on Si and GaAs substrates will be presented and integration with FETs discussed. (Author abstract) 5 Refs.

29/3,AB/20 (Item 7 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

04101427
E.I. No: EIP95031611883
Title: **Laser** diodes for optical readout of cryo-electronics
Author: Bunz, Lewis A.; Rylov, Sergey V.; Track, Elie K.
Corporate Source: Hypres Inc., Cortlandt Manor, NY, USA
Conference Title: Infrared Readout Electronics II
Conference Location: Orlando, FL, USA Conference Date: 19940407-19940408
E.I. Conference No.: 21415
Source: Proceedings of SPIE - The International Society for Optical Engineering v 2226 1994. Publ by Society of Photo-Optical Instrumentation Engineers, Bellingham, WA, USA. p 50-59
Publication Year: 1994
CODEN: PSISDG ISSN: 0277-786X ISBN: 0-8194-1530-8
Language: English
Abstract: We report successful coupling of electrical signals from **low temperature** (4.2 K) superconducting circuitry to room temperature electronics using **laser** diodes coupled to optical fibers.

The techniques used rely on **laser** diodes operating at **low temperatures**, and on high gain amplifiers placed outside the **low temperature** environment. A new superconducting driver circuit is used to step-up the low output of these circuits to a seven millivolt level, sufficient to modulate the **laser** diodes. By properly choosing the **laser** source, the power dissipated within the **cryogenic** environment can be maintained below 400 mu W, with further improvements easily reached. 14 Refs.

29/3,AB/21 (Item 8 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

03912408
E.I. No: EIP94081360204
Title: Deep **cryogenic** noise and electrical characterization of the complementary heterojunction field-effect transistor (CHFET)
Author: Cunningham, Thomas J.; Gee, Russell C.; Fossum, Eric R.; Baier, Steven M.
Corporate Source: California Inst of Technology, Pasadena, CA, USA
Source: IEEE Transactions on Electron Devices v 41 n 6 Jun 1994. p 888-894
Publication Year: 1994
CODEN: IETDAI ISSN: 0018-9383
Language: English
Abstract: This paper discusses a characterization at 4 K of the complementary heterojunction field-effect transistor (CHFET), to examine its suitability for deep **cryogenic** (less than 10 K) readout electronics applications. The CHFET is a GaAs-based transistor analogous in structure and operation to silicon CMOS. The electrical properties including the gate leakage current, subthreshold transconductance, and input-referred noise voltage were examined. It is shown that both n-channel and p-channel CHFET's are fully functional at 4 K, with no anomalous behavior, such as hysteresis or kinks. Complementary circuit designs are possible, and a simple CHFET-based multiplexed op-amp is presented and characterized at 4 K. The noise and gate leakage current of the CHFET are presently several orders of magnitude too large for readout applications, however. The input-referred noise is on the order of 1 mu V/ root Hz at 100 Hz for a 50 multiplied by 50 mu m n-channel CHFET. The gate current is strongly dependent on the doping at the gate edge, and is on the order of 10** minus **1**4 A for a 10 multiplied by 10 mu m**2 n-channel CHFET with **light** gate-edge region doping. (Author abstract) 14 Refs.

29/3,AB/22 (Item 9 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

00101161
E.I. Monthly No: EI70X144382
Title: Conference on physical aspects of noise in electronic devices sponsored by Inst of Physics, and Physical Soc, Electronics Group, in collaboration with Electronics Div of Inst of Elec Eng, Sept 11- 13 1968, Univ of Nottingham, Engl.
Author: ANON
Source: Peter Peregrinus Ltd, Stevenage, Hertfordshire, Engl, 1969, 248 p
Publication Year: 1969
Language: ENGLISH
Abstract: Conference report includes thirty- six papers which cover wide variety of subjects in area of noise measurement, generation, and noise in

electron tubes, semiconductor devices, transistors, thin films, **lasers**, masers, photodetectors, parametric **amplifiers**, and other electronic **devices**. 428 refs. Following papers presented- The physical basis of noise; F. J. HYDR; p 1. Noise measurement techniques applied to devices; W. A. GAMBLING; p 18. Noise in microwave tubes; A. D. WILLIAMS; p 30. Noise generated by signals; C. S. BULL; p 36. The transit counting method as a detector in V. L. F. noise spectrum measurement; H. SUTCLIFFE; p 40. A radiometer for measurement of the noise **temperature** of **low** noise microwave amplifiers; J. W. CARTER, H. N. DAGLISH, P. MOORE; p 44. Flicker noise from tungsten cathodes; B. J. CLIMER; p 50. The shot noise of a thermionic diode; C. S. BULL, F. ARTHUR; p 54. Demonstration of the fluctuations of the conductance of a diode; C. S. BULL, P. BREEZE; p 58. Noise in semiconductor devices- Theory; A. Van der ZIEL; p 61. Noise in semiconductor devices- Experiments; E. A. FAULKNER; p 79. Noise of field- effect transistors at very high frequencies; F. M. KLAASSEN; p 91. Double injection and noise in germanium diodes; F. DRIEDONKS, R. J. J. ZIJLSTRA; p 95. Burst noise in silicon planar transistors; J. C. MARTIN, D. ESTEVE, G. BLASQUEZ; p 99. Low frequency noise in **amplifying devices**; K. F. KNOTT; p 103. 1/f noise; D. A. BELL; p 106. Noise measurements in copper- phtalocyanine thin films; J. P. FILLARD, G. LECOY, D. RIGAUD; p 116. Amplitude distribution of 1/f noise in CdSe thin layers; F. N. HOOGE; p 123. Current noise in M. O. S. transistors at very low frequencies; R. J. HAWKINS, I. R. M. MANSOUR, G. G. BLOODWORTH; p 127. Hysteresis effects in M. O. S. transistors; I. LUNDSTROM, S. CHRISTENSSON, C. SVENSSON; p 131. Low frequency noise in M. O. S. Ts; F. BERZ, I. FLINN; p 135. 1/f noise in silicon planar transistors; J. C. MARTIN, D. ESTEVE, A. de CACQUERAY, J. M. RIBEYROL; p 139. Noise in thin films metal- oxide- metal Al- Al//2O//3- Al; L. GOUSKOV, G. LECOY, M. SAVELLI; p 144. Radiation statistics; P. A. LINDSAY; p 150. Noise in masers and **lasers**; C. R. DITCHFIELD; p 162. Investigation of the current noise and frequency modulation noise in Gunn diodes; M. L. MEADE; p 174. The influence of Johnson noise on bulk negative resistance devices; G. S. HOBSON; p 180. Noise in solid state photodetectors; R. J. J. ZIJLSTRA; p 184. Noise in the pyroelectric detector; D. E. CHARLTON, G. BAKER; p 198. Some practical aspects of noise in infrared detectors; J. A. CHIARI, M. R. JOSEY; p 202. Noise in electron/photo multipliers; C. J. OLIVER; p 207. Low noise image detectors; P. H. BATEY; p 219. Statistics of channel multiplier particle detectors; W. M. SACKINGER, J. M. JOHNSON; p 227. The temperature dependence of the dark current of a photoelectron multiplier; D. E. G. HATHAWAY, C. S. BULL; p 232. Noise in parametric amplifiers; C. S. AITCHISON; p 236. The noise temperature of liquid helium cooled parametric amplifiers; P. A. WATSON; p 243.

29/3,AB/23 (Item 1 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

08449441 Genuine Article#: 286ZV Number of References: 23
Title: **Low-temperature** spectrally resolved cathodoluminescence study of degradation in opto-electronic and microelectronic devices (ABSTRACT AVAILABLE)
Author(s): Fregonara CZ (REPRINT) ; Salviati G; Borgarino M; Lazzarini L; Fantini F
Corporate Source: CNR,INST MASPEC, CAMPUS UNIV, PARCO AREA SCI/I-43100 PARMA//ITALY/ (REPRINT); UNIV PARMA,DEPT INFORMAT ENGN/I-43100 PARMA//ITALY/; INTERDEPARTMENTAL CTR MAT & INFORMAT TECHNOL,/I-43100 PARMA//ITALY/
Journal: MICRON, 2000, V31, N3 (JUN), P269-275
ISSN: 0968-4328 Publication date: 20000600
Publisher: PERGAMON-ELSEVIER SCIENCE LTD, THE BOULEVARD, LANGFORD LANE,

KIDLINGTON, OXFORD OX5 1GB, ENGLAND
Language: English Document Type: ARTICLE
Abstract: This study reports on the microcharacterization of devices for optoelectronic and for microelectronic applications using **low temperature** (T = 5 and 77 K) spectrally resolved cathodoluminescence (SCL). The mechanisms leading to compositional inhomogeneities in the regrowth regions of InP-based butt-coupled **laser**-waveguide **devices** for semiconducting optical **amplifiers** (SOAs) and for defect generation in the active and cladding layers of GaAs based pump **lasers** for erbium-doped optical fibre amplifiers (EDFAs) were studied. Beryllium outdiffusion in the base regions of GaAs-based heterojunction bipolar transistors (HBTs) after bias ageing was also studied. By comparing the CL results with TEM, SIMS and HRXRD studies and with the existing literature, the observed growth and operation induced defects were attributed, respectively, to the following mechanisms: recombination-enhanced defect glide (REDG) in the pump **lasers**, recombination enhanced impurity diffusion (REID) in the HBTs and electrostatically induced growth flux instabilities in the butt-coupled **laser**-waveguide devices. (C) 2000 Elsevier Science Ltd. All rights reserved.

29/3,AB/24 (Item 2 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

05928357 Genuine Article#: XH055 Number of References: 44
Title: Nonlinear propagation of optical pulses of a few oscillations duration in dielectric media (ABSTRACT AVAILABLE)
Author(s): Kozlov SA (REPRINT) ; Sazonov SV
Corporate Source: ST PETERSBURG STATE INST PRECIS MECH & OPT,/ST PETERSBURG 197101//RUSSIA/ (REPRINT); ASTRAKHAN STATE TECH UNIV,/ASTRAKHAN 414025//RUSSIA/
Journal: JOURNAL OF EXPERIMENTAL AND THEORETICAL PHYSICS, 1997, V84, N2 (FEB), P221-228
ISSN: 1063-7761 Publication date: 19970200
Publisher: AMER INST PHYSICS, CIRCULATION FULFILLMENT DIV, 500 SUNNYSIDE BLVD, WOODBURY, NY 11797-2999
Language: English Document Type: ARTICLE
Abstract: Using a semi-phenomenological model of the polarization response of an isotropic solid dielectric that does not resort to the slowly-varying-envelope approximation, we have obtained a nonlinear wave equation for the electric field of a femtosecond **light** pulse propagating in the given dielectric. Evidence is presented that this equation possesses breatherlike solutions in the region of anomalous group dispersion and does not have any solutions in the form of steady-state traveling solitary video pulses. A universal relation is found linking the minimum possible duration of a breatherlike pulse with the medium parameters. It is shown that such a pulse contains roughly one and a half periods of the **light**-wave. (C) 1997 American Institute of Physics.

29/3,AB/25 (Item 3 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

02891769 Genuine Article#: MN136 Number of References: 27
Title: IMPLEMENTATIONS OF SMART PIXELS FOR OPTOELECTRONIC PROCESSORS AND INTERCONNECTION SYSTEMS .1. OPTOELECTRONIC GATE TECHNOLOGY (Abstract Available)

Author(s): YU S; FORREST SR
Corporate Source: PRINCETON UNIV,DEPT ELECT ENGN,ADV TECHNOL CTR PHOTON & OPTOELECTR MAT ATCPO/PRINCETON//NJ/08544
Journal: JOURNAL OF LIGHTWAVE TECHNOLOGY, 1993, V11, N10 (OCT), P1659-1669
ISSN: 0733-8724
Language: ENGLISH Document Type: ARTICLE
Abstract: Smart pixels are an emerging technology for implementing optical interconnections and optoelectronic computing systems. We have studied several of the common approaches to smart pixel technology, including smart pixels based on optoelectronic integrated circuits and self-electrooptic effect devices (SEED's). In this first of two papers (Part I), an optoelectronic NOR gate pixel consisting of an output **laser** diode, two input photodetectors, and a transistor circuit is analyzed for the purpose of investigating overall two-dimensional (2D) interconnection and processing system performance. We then analyze and discuss the major pixel performance issues. The results show that the optoelectronic logic gate has the advantages of low noise (typically approximately -35dBm), high bandwidth (> 1 GHz), and **low temperature** sensitivity while its power dissipation is about 5 mW, resulting in a moderate pixel packing density of 200/cm2 for a total chip power dissipation of 1 W/cm2. In the subsequent paper (Part II), we analyze a similar SEED-based logic element and compare its performance to the optoelectronic approach studied here.

29/3,AB/26 (Item 4 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

02677331 Genuine Article#: LV422 Number of References: 35
Title: HIGH-POWER CO **LASERS** IN RUSSIA (Abstract Available)
Author(s): IONIN AA
Corporate Source: PN LEBEDEV PHYS INST/MOSCOW//RUSSIA/
Journal: KVANTOVAYA ELEKTRONIKA, 1993, V20, N2 (FEB), P113-122
ISSN: 0368-7147
Language: RUSSIAN Document Type: ARTICLE
Abstract: Investigation, production and application of CO **lasers** in Russia is reviewed. At present, in numerous laboratories various kinds of cw, pulse and pulse-periodic CO **lasers** have been developed. Continuous sealed-off CO **lasers** with water cooling and generation power over 5-10 W, excited by self-sustained electric discharge, are successfully manufactured and used in electronics devices and in medicine. The generation power of the fast-flow cw **cryogenic** CO **laser** with self-sustained discharge reaches approximately 1 kJ. The application of electro-ionisation (EI) pumping has led to the creation of pulsed EI CO **lasers** with approximately 1 kJ energy and cw and pulsed-periodic EI CO **lasers** with 10 kW power and efficiency of approximately 40 %. The investigations of pulsed EI CO **lasers** laid the foundation for the creation of CO **laser** ''master generator - amplifier'' and systems such as pulse-periodic CO **lasers**. A **laser** system with 200 J energy and radiation angular divergence of 2.10(-4) rad has been constructed. The requirements on the efficient **amplification** in the active **medium** and the transportation of CO **laser** multifrequency pulses with various spectral and temporal properties through the air have been set. Supersonic EI CO **laser** with the peak power of 10(5) W and a pulse-periodic EI CO 10 kW **laser** with the flow speed lower than sound speed generating approximately 100 J pulses with a repetition rate of up to 100 Hz have been made. EI CO-**lasers** with the **laser** mixture injection in the liquid state and those with nuclear ionization are developed.

29/3,AB/27 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus

04493576 JICST ACCESSION NUMBER: 00A0150911 FILE SEGMENT: JICST-E
Design of an Apparatus for Verification of Formation of Bioorganic Compounds on the Exposed Facility of JEM.
HASHIMOTO HIROFUMI (1); USHIO KENTARO (2); ISHIKAWA YOJI (3); OSHIMA TAIRO (4); BRACK A (5); COLANGELI L (6); GREENBERG J M (7); HORNECK G (8); RAULIN F (9)
(1) Univ. of Tsukuba; (2) Yokohama Natl. Univ.; (3) Ohbayashi Corp.; (4) Tokyo Coll. of Pharm.; (5) Cnrs; (6) Capodimonte Ao; (7) Leiden Univ. ; (8) Dlr; (9) Paris Univ.
Uchu Kagaku Gijutsu Rengo Koenkai Koenshu(Proceedings of the Space Sciences and Technology Conference), 1999, VOL.43rd, PAGE.923-928, FIG.1, REF.6
JOURNAL NUMBER: S0277ACS
UNIVERSAL DECIMAL CLASSIFICATION: 575.858
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Conference Proceeding
ARTICLE TYPE: Short Communication
MEDIA TYPE: Printed Publication
ABSTRACT: A conceptual design was developed for a cosmobiology experiment. It is intended to expose simulated interstellar ice materials deposited on dust grains to the space environment. The experimental system consists of a **cryogenic** system to keep solidified gas sample, an optical **device** to select and **amplify** the ultraviolet part of the solar **light** for irradiation, and an analytic system for investigation of products in the ice. Hardware components and the specifications were also defined in order to achieve the scientific objectives of this experiment. Requirements for interface between the system and JEM were shown. (author abst.)

29/3,AB/28 (Item 2 from file: 94)
DIALOG(R)File 94:JICST-EPlus

03948660 JICST ACCESSION NUMBER: 99A0198854 FILE SEGMENT: JICST-E
A Conceptual Design for Cosmo-biology Experiments in Earth's Orbit.
HASHIMOTO H (1); GREENBERG M (2); BRACK A (3); COLANGELI L (4); HORNECK G (5); NAVARRO-GONZALEZ R (6); RAULIN F (7); KOUCHI A (8); KOBAYASHI K (9)
(1) Univ. Tsukuba, Ibaraki, Jpn; (2) Univ. Leiden, Ra Leiden, Nld; (3) Cnrs, Centre De Biophysique Moleculaire, Orleans, Fra; (4)Osservatorio Astronomico Di Capodimonte, Napoli, Ita; (5) Dlr, Koeln, Deu; (6) Univ. Nacional Autonoma De Mexico, Mexico D.f., Mex; (7) Univ. Paris 7 Et 12, Creteil, Fra; (8) Univ. Hokkaido, Hokkaido, Jpn; (9) Yokohama National Univ., Kanagawa, Jpn
Uchu Seibutsu Kagaku(Biological Sciences in Space), 1998, VOL.12,NO.2, PAGE.106-111, FIG.1, REF.8
JOURNAL NUMBER: L2173AAU ISSN NO: 0914-9201
UNIVERSAL DECIMAL CLASSIFICATION: 575.858
LANGUAGE: English COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Commentary
MEDIA TYPE: Printed Publication
ABSTRACT: A conceptual design was developed for a cosmo-biology experiment. It is intended to expose simulated interstellar ice materials deposited on dust grains to the space environment. The experimental system

consists of a **cryogenic** system to keep solidified gas sample, and an optical **device** to select and **amplify** the ultraviolet part of the solar **light** for irradiation. By this approach, the long lasting chemical evolution of icy species could be examined in a much shorter time of exposure by amplification of **light** intensity. The removal of **light** at longer wavelength, which is ineffective to induce photochemical reactions, reduces the heat load to the **cryogenic** system that holds solidified reactants including CO as a constituent species of interstellar materials. Other major hardware components were also defined in order to achieve the scintific objectives of this experiment. Those are a cold trap maintained at liquid nitrogen temperature to prevent the contaminaton of the sample during the exposure, a mechanism to exchange multiple samples, and a system to perform bake-out of the sample exposure chamber. This experiment system is proposed as a candidate payload implemented on the exposed facility of Japanese Experiment Module on International Space Station. (author abst.)

29/3,AB/29 (Item 1 from file: 144)
DIALOG(R)File 144:Pascal

13062275 PASCAL No.: 97-0352746
Charge-collection characteristics of GaAs MESFETs fabricated with a **low-temperature** grown GaAs buffer layer: Computer simulation
MCMORROW D; CURTICE W R; BUCHNER S; KNUDSON A R; MELINGER J S; CAMPBELL A B
Naval Research Lab, Washington DC, United States
Proceedings of the 1996 IEEE Nuclear and Space Radiation Effects Conference, NSPEC (Indian Wells, CA, USA) 1996-07-15/1996-07-19
Journal: IEEE Transactions on Nuclear Science, 1996, 43 (6 Pt 1) 2904-2912
Language: English
Two-dimensional device simulations of GaAs MESFETs fabricated with a **low-temperature** grown GaAs (LT GaAs) buffer layer reveal a sensitive dependence of the charge-collection characteristics on various structural and operational parameters. Simulations performed for above-band-gap pulsed **laser** excitation indicate that, even when the bulk of the charge is deposited above the LT region, the improved SEU and charge-collection performance of LT GaAs devices largely is a consequence of the reduced efficiency of the carrier-induced charge-enhancement (gain) mechanism.

29/3,AB/30 (Item 1 from file: 103)
DIALOG(R)File 103:Energy SciTec

04718495 EDB-01-067740
Title: Control, monitoring and data acquisition systems in pilot plant for tritium and deuterium separation
Author(s): Retevoi, Carmen; Balteanu, Ovidiu Ioan (National Institute of Research-Development for Cryogenic and Isotopic Technologies, ICSI, PO Box 10, Str. Uzinei nr. 4, RO-1000 Rm. Valcea (Romania))
Title: Progress in **Cryogenics** and Isotope Separation - 1999. 5. ICSI Conference. Abstracts
Author(s)/Editor(s): Stefanescu, I. (National Institute of Research-Development for Cryogenic and Isotopic Technologies, ICSI, PO Box 10, Str. Uzinei nr. 4, RO-1000 Rm. Valcea (Romania))
Corporate Source: National Institute of Research-Development for

Cryogenic and Isotopic Technologies, ICSI, PO Box 10, Str. Uzinei nr. 4, RO-1000 Rm. Valcea (Romania)
Sponsoring Organization: National Agency of Science, Technology and Innovation, Bucharest (Romania)
Conference Title: Progress in Cryogenics and Isotope Separation - 1999. 5. ICSI Conference
Conference Location: Caciulata - Valcea (Romania) Conference Date: 21 - 22 Oct 1999
Publisher: Rm. Valcea (Romania) National Institute of Research-Development for Cryogenic and Isotopic Technologies
Publication Date: 1999
p 58-59 (106 p)
Language: English
Abstract: To achieve the control, monitoring and data acquisition for a pilot plant for tritium and deuterium separation we have developed a system based on computer processing which transfers and treats all the data from the physical system. It consists of six basic elements: 1. a process computer ; 2. a National **Instruments Amplifier** /Multiplexed - SCXI 1000 with a SCXI 1100 Module with 32 differential input channels; 3. a Honeywell Digital Process Recorder - DPR 250, with 32 universal input, 12 digital input and 12 internal relays; 4. a control system for 4 throttle valves; 5. a National Instruments Data Acquisition board - AT-MIO-16XE-10, with 8 differential channels; 6. a system consisting of up to 20 digital programming current units for carbon RTD's. All the parameters from transducers, sensors and transmitters are introduced into the multiplexer and beyond into the acquisition data board. With LabVIEW soft support (National Instrument product), we made a graphic interface which displays the plant and all the parameters and their points of measure and cumulates all these data into a file. On the other hand all the pressure flow and level values are monitored by the recorder DPR 250, which has a RS232/RS485 port for PC communication. The temperatures are measured with carbon RTD's and a system comprising 20 programming current units connected by RS485 serial bus and a RS485/RS232 converter directly to the serial port of process computer. A special program makes the voltage/temperature conversion. The control system for throttle valves comprises a central unit, which communicates by RS232 bus with 4 controllers commanding 4 stepping motors. Every stepping motor is linked by a reductor to the throttle valve. This system can operate in either manual or automatic mode. The central unit can communicate with process computer via RS232 link. In this way a process computer can receive all the parameters by means of RS232/RS245 link or directly through the multiplexer and acquisition data board. The advantage of this system is that the parameters are monitored and controlled by a single unit and if necessary the elements of this system can work separately. (authors)

29/3,AB/31 (Item 2 from file: 103)
DIALOG(R)File 103:Energy SciTec

01135150 EDB-83-035162
Title: Coumarins in the gaseous phase. III. Coumarin 6 vapor **laser** with 12% efficiency
Author(s): Logunov, O.A.; Startsev, A.V.; Stoilov, Y.Y.
Affiliation: P. N. Lebedev Physics Institute, Academy of Sciences of the USSR, Moscow
Source: Sov. J. Quant. Electron. (Engl. Transl.) (United States) v 12:6.
Coden: SJQEA
Publication Date: Jun 1982
p 755-758

Language: English
Abstract: Lasing of coumarin 6 (C6) vapor mixed with diethyl ether (tauapprox.210 /sup 0/C) was observed in the range of 520 nm for transverse pumping with the third harmonic of a neodymium **laser** (355 nm, 20 nsec, 100 mJ). The dependence of the lasing efficiency on the transmission of the resonator mirrors was used to estimate the internal losses (0.02--0.03 cm/sup -1/) and the gain in the active **medium**. The **amplification** cross section of C6 in the 520 nm range was 3.5 x 10/sup -17/ cm/sup 2/. At the beginning of a pump pulse the lasing efficiency in the optimal resonator was 15% (and the corresponding quantum efficiency was 22%), but at the end of the pulse it fell to 10%. A study was made of the mechanisms of the induced losses. The observed fall of the efficiency was mainly due to an increase in the induced absorption and the pump wavelength. Feasibility of constructing a cw C6 vapor **laser** was considered.

29/3,AB/32 (Item 3 from file: 103)
DIALOG(R)File 103:Energy SciTec

00245939 AIX-08-308751; EDB-77-083959
Title: **Laser** action in stellar envelopes
Author(s): Varshni, Y.P.; Lam, C.S. (Ottawa Univ., Ontario (Canada). Dept. of Physics)
Source: Astrophys. Space Sci. (Netherlands) v 45:1. Coden: APSSB
Publication Date: Nov 1976
p 87-97
Language: English
Abstract: It is shown that in high-temperature stars in which high speed mass loss is occurring, the rapidly recombining plasma in the stellar envelope can act as an **amplifying medium**. Model calculations for **laser** action in He II lambda4686, using the collisional-radiative model, are presented. Menzel's hypothesis of **laser** action in distended stellar atmospheres is shown to be fully substantiated. The relevance of these results in resolving the problem in intensity anomalies in the spectra of Wolf-Rayet stars is pointed out.

29/3,AB/33 (Item 4 from file: 103)
DIALOG(R)File 103:Energy SciTec

00154738 AIX-07-234610; EDB-76-093042
Title: Recombining plasmas as **laser** sources
Author(s): Ali, A.W.; Jones, W.W. (Naval Research Lab., Washington, D.C. (USA)); Hoelscher, J.G.A.; Schram, D.C. (eds.)
Title: Phenomena in ionized gases. Vol. I
Conference Title: 12. international conference on phenomena in ionized gases
Conference Location: Eindhoven, The Netherlands Conference Date: 18 Aug 1975
Publisher: North-Holland Publishing Co.,Amsterdam
Publication Date: 1975
p 212
Language: English
Abstract: The recombination of a dense plasma into a hydrogen-like ion introduces a potential **medium** for the **amplification** of radiation over a wide spectral range from ir to X-Rays. The recombination is a three-body process and hence favours the higher

quantum levels. A time dependent calculation shows very large gains for relatively **cold temperatures**. The time histories of inversion densities and hence the termination of the **laser** action are controlled by the return of the plasma into equilibrium condition.

29/3,AB/34 (Item 5 from file: 103)
DIALOG(R)File 103:Energy SciTec

00144164 ERA-02-001358; EDB-76-082197
Title: Optical energy extraction from electron-beam-initiated H/sub 2/--F/sub 2/ mixtures
Author(s): Tisone, G.C.; Hoffman, J.M.
Affiliation: Sandia Laboratories, Albuquerque, New Mexico 87115
Source: J. Appl. Phys. (United States) v 47:7. Coden: JAPIA
Publication Date: Aug 1976
p 3530-3532
Language: English
Abstract: An oscillator, based on electric discharge in an SF/sub 6/-H/sub 2/ mixture and yielding 400-nsec pulses, was used to probe an HF **amplifying medium** produced by electron-beam initiation of H/sub 2/-F/sub 2/ mixtures. The oscillator produced 17 lines of the P/sub 1/, P/sub 2/, and P/sub 3/ transitions. The oscillator power density at the input to the amplifier was about 2 x 10/sup 4/ W/cm/sup 2/ at the time the H/sub 2/-F/sub 2/ mixture was initiated. The power gain of the amplifier was estimated to be 500. Results indicate that with 17 lines from the v'=1, v'=2, and v'=3 vibrational levels of HF, about 6% of the generated energy can be extracted by the oscillator beam. The results of the experiment have also beem compared with a model calculation. (AIP)

29/3,AB/35 (Item 6 from file: 103)
DIALOG(R)File 103:Energy SciTec

00129153 EDB-76-066689
Author(s): Dahan, C.
Title: Calculation of a CO/sub 2/--N/sub 2/--He in-flow **amplifying medium**
Series/Collection Title: TP No. 1975-72
Conference Title: Conference of the French Society of Physics
Conference Location: Dijon, France Conference Date: 30 Jun 1975
Publisher: Office National d'Etudes et de Recherches Aerospatiales,Hauts-de-Seine, France
Publication Date: 1975
p 14
Language: French
Abstract: The performance of a CO/sub 2/-N/sub 2/-He **laser** ionized by an electron beam is calculated. Phenomena taken into account in the calculations include energy exchange processes among the molecules of the **laser** medium, processes of excitation by electrons, and (in the case of continuous excitation) aerodynamic processes. Since the energy exchanges accompanying the **laser** effect release significant quantities of heat which must be dissipated by the flow, the traditional energy exchange equations are coupled to equations describing the flow. Several numerical results are presented concerning the evolution of the **laser** gain, of thermodynamic parameters (temperature, Mach number), and of electric parameters (electron temperature and density).

35/3,AB/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

5960999 INSPEC Abstract Number: A9816-4260B-005, B9808-4320G-040
Title: Design and implementation of a TW-class high-average power laser system
Author(s): Durfee, C.G., III.; Backus, S.; Murnane, M.M.; Kapteyn, H.C.
Author Affiliation: Center for Ultrafast Opt. Sci., Michigan Univ., Ann Arbor, MI, USA
Journal: IEEE Journal of Selected Topics in Quantum Electronics vol.4, no.2 p.395-406
Publisher: IEEE,
Publication Date: March-April 1998 Country of Publication: USA
CODEN: IJSQEN ISSN: 1077-260X
SICI: 1077-260X(199803/04)4:2L.395:DICH;1-S
Material Identity Number: C465-98005
U.S. Copyright Clearance Center Code: 1077-260X/98/$10.00
Language: English
Abstract: We describe the design, modeling and characterization of a titanium-doped sapphire multipass, kilohertz amplifier system with output pulses of energy 4.4 mJ and duration 17 fs, giving a peak power of 0.26 TW. The thermal lensing in the second **amplifier** stage is virtually eliminated by **cryogenic** cooling of the **laser** crystal. Gain-narrowing and shifting of the **amplified** spectrum are reduced by tailoring the output spectrum of the **oscillator** and by using a low-loss multipass amplifier chain. Fourth-order spectral dispersion was completely eliminated by using a prism pair in addition to adjusting the stretcher and compressor grating separation and angle. We also numerically modeled the evolution of the pulse energy and spectral phase and amplitude through the amplifier system. The results of the model are in excellent agreement with measurements made using the technique of transient-grating frequency-resolved optical gating.
Subfile: A B

35/3,AB/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC

5052469 INSPEC Abstract Number: B9511-1230B-001
Title: Solid-state acoustic **oscillator** based on p/sup +/-p(Si(Mn))-p/sup +/ structures
Author(s): Ayupov, K.S.; Bakhadyrkhanov, M.K.; Zikrilaev, N.F.
Author Affiliation: Tashkent State Tech. Univ., Uzbekistan
Journal: Pis'ma v Zhurnal Tekhnicheskoi Fizika vol.21, no.13-14 p. 18-21
Publication Date: July 1995 Country of Publication: Russia
CODEN: PZTFDD ISSN: 0320-0108
Translated in: Technical Physics Letters vol.21, no.7 p.544-5
Publication Date: July 1995 Country of Publication: USA
CODEN: TPLEED ISSN: 1063-7850
U.S. Copyright Clearance Center Code: 1063-7850/95/070544-02$10.00
Language: English
Abstract: Previously an investigation of different forms of current instabilities in highly compensated, manganese-doped silicon was reported. The current **oscillations** in these samples were divided into several types according to how they appeared. Current **oscillations** of one type consisted of the temperature-electric current instabilities (TEIs)

with quite high amplitudes I=1-300 mA and ultralow frequency f=10/sup -3/-10 Hz, observed in the temperature interval T=77-180 K. **Oscillations** of the other type consisted of instabilities of recombination waves (RWs) with amplitude 1=10/sup -6/-10/sup -4/ A and frequency f=10/sup 3/-10/sup 4/ Hz, which appear at temperatures T=250-350 K. Solid-state lasers have been proposed and developed based on these **oscillations** , but these lasers have certain drawbacks, for example, the excitation of temperature-electric instabilities requires **low temperature** and **illumination** while the recombination wave instabilities are characterized by low **amplitudes**, a low modulation factor, and the presence of strong noise. In the present paper we propose a solution for these problems on the basis of p/sup +/-Si:Mn-p/sup +/ structures.
Subfile: B

35/3,AB/3 (Item 3 from file: 2)
DIALOG(R)File 2:INSPEC

02195570 INSPEC Abstract Number: A84025439, B84009453
Title: The two-dimensional electron gas and its technical applications
Author(s): Linh, N.T.
Author Affiliation: Thomson-CSF Central Res. Lab., Orsay, France
Conference Title: Advances in Solid State Physics. Vol.23. Spring Meeting of the Subgroup Solid State Physics of the German Physical Society p. 227-57
Editor(s): Grosse, P.
Publisher: Friedr. Vieweg & Sohn, Braunschweig, West Germany
Publication Date: 1983 Country of Publication: West Germany viii+326 pp.
ISBN: 3 528 08029 9
Conference Date: 21-25 March 1983 Conference Location: Freudenstadt, West Germany
Language: English
Abstract: Two-dimensional systems constituted by III-V compound semiconductor heterojunctions are first recalled. Optical properties of double heterojunction quantum wells (QW) and transport properties in selectively-doped heterojunction two-dimensional electron gas (2DEG) are described. In particular quantum effects associated with the two-dimensional character of these systems (intersubband transitions, step-like density of states, Shubnikov-de-Haas **oscillations** , quantized Hall effects...) are pointed out. The reduced electron-impurity scattering and the enhanced screening effect in the 2DEG is also studied. Electronic devices using two-dimensional systems have been found to exhibit higher performances than conventional devices: ultralow threshold current and **low temperature**-sensitivity for QW **lasers** and super-low noise **amplification** and high speed-low power circuit integration for two-dimensional electron gas FETs, (TEGFETs). Interpretations of these high performances are given. These devices which are the basic foundation of modern electronics (optical fiber communication, satellite communication, super-computer...) illustrate the tremendous interest of two-dimension al systems.
Subfile: A B

35/3,AB/4 (Item 4 from file: 2)
DIALOG(R)File 2:INSPEC

02190399 INSPEC Abstract Number: A84019421, B84010123
Title: Enhancement of the energy and operating characteristics of electroionization CO/sub 2/ **amplifiers** for **laser** thermonuclear fusion during **cryogenic** cooling of the lasing mixture
Author(s): Basov, N.G.; Glotov, E.P.; Danilychev, V.A.; Koterov, V.N.; Soroka, A.M.; Cheburkin, N.V.
Author Affiliation: P.N. Lebedev Phys. Inst., Acad. of Sci., Moscow, USSR
Journal: Doklady Akademii Nauk SSSR vol.270, no.1-3 p.605-8
Publication Date: May 1983 Country of Publication: USSR
CODEN: DANKAS ISSN: 0002-3264
Translated in: Soviet Physics - Doklady vol.28, no.5 p.410-12
Publication Date: May 1983 Country of Publication: USA
CODEN: SPHDA9 ISSN: 0038-5689
U.S. Copyright Clearance Center Code: 0038-5689/83/050410-03$02.20
Language: English
Abstract: Experimental and theoretical work is under way at present on the possible use of an electroionization CO/sub 2/ laser for purposes of laser thermonuclear fusion. Since the optimal lasing duration is approximately 10/sup -8/-10/sup -9/ sec, it becomes necessary to use a master-**oscillator** -amplifier system, the energy characteristics of this system being determined by the amplifier. The authors calculate the lasing and discharge characteristics of a CO/sub 2/ electroionization amplifier at various initial temperatures and pump-pulse durations.
Subfile: A B

35/3,AB/5 (Item 1 from file: 6)
DIALOG(R)File 6:NTIS

1218326 NTIS Accession Number: AD-A161 955/0
Raman FEL (Free Electron Laser) at 2mm Wavelength. Design of an Efficiency-Enhanced Raman FEL **Oscillator**
(Annual technical summary and status rept. Oct 84-Oct 85)
Masud, J. ; Yee, F. G. ; Marshall, T. C. ; Schlesinger, S. P.
Dartmouth Coll., Hanover, NH.
Corp. Source Codes: 007391000; 103800
Oct 85 36p
Languages: English
Journal Announcement: GRAI8606
Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.
NTIS Prices: PC A03/MF A01
The nonlinear physics of the free electron laser (FEL) involves waves set up in a nearly cold electron beam when it passes through the undulator. In addition to the pump field and the growing scattered EM wave moving parallel to the electrons, there is a disturbance in the beam space charge caused by the ponderomotive force. In this paper we discuss initial experimentation using a simple Raman **oscillator** and amplifier. The purpose of the **oscillator** and amplifier. The purpose of the **oscillator** is to define initially the regions of substantial gain by observing the emission wavelength. Following this, the gain is observed in and amplifier configuration, using a CO sub 2 laser pumping an NH sub 3 gaseous laser at 140 GHz (2.14mm).

35/3,AB/6 (Item 2 from file: 6)
DIALOG(R)File 6:NTIS

0610526 NTIS Accession Number: AD-824 455/0/XAB
Semiconductor Laser Array Techniques (Semlat)
(Final rept. May 66-Sep 67)
Collins, N. E. ; Jones, J. E. ; Kim, H. B. ; Magdo, S. ; Mallory, W. R.
General Electric CO Syracuse N Y
Corp. Source Codes: 149500
Report No.: RADC-TR-67-586
Nov 67 96p
Journal Announcement: GRAI7709
See also AD-609 064.
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NTIS Prices: PC A05/MF A01
The primary objective of the program was to determine the feasibility of a cascaded semiconductor array amplification scheme. The results of an extensive materials investigation led to a further understanding of many of the factors relating GaAs material characteristics to laser diode performance. A system comprised of a GaAs master **oscillator** laser driving two linear ten-diode amplifying arrays was constructed. The system was evaluated by the performance of a cascaded two-element beam amplification experiment. The results of this experiment successfully demonstrated the feasibility of coherent cascaded array amplification.

35/3,AB/7 (Item 3 from file: 6)
DIALOG(R)File 6:NTIS

0091381 NTIS Accession Number: AD-615 112/XAB
Further Considerations on Regenerative Ruby Laser Amplifiers
Jacobs, H. ; Brand, F. A. ; LoCascio, C. ; Novick, G. ; Castro, J.
Army Electronics Command Fort Monmouth N J
Corp. Source Codes: 888888888
Report No.: ECOM-2575
Mar 65 2p
Journal Announcement: USGRDR6512
Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.
NTIS Prices: PC A02
Experiments were initiated to investigate the validity of amplifiers using ruby at liquid nitrogen temperatures. A transmission system was set up and by controlling the relative time delays in firing both rods, the properties of transmitted power gain were studied. It was found that both the **oscillator** and amplifier rubies when uncoated, could be made to **oscillate** for about 100 micro sec giving a well-defined pulse of quasi CW operation. The gain of the amplifier increased as the times of the input signal from the **oscillator** approached the time at which the amplifier went into **oscillation**. If the **oscillator** was delayed so that its signal occurred at increasing time after the amplifier **oscillations** had ceased, the power gain decreased, even though the amplifier crystal was still being pumped. Finally, with still further delay in signal relative to the amplifier **oscillation** period, an attenuation in transmission was observed. Analysis of these data provides information which is consistent so far with the previously reported theory. (Author)

35/3,AB/8 (Item 4 from file: 6)
DIALOG(R)File 6:NTIS

0078475 NTIS Accession Number: AD-601 712/XAB
Semiconductor Laser Amplifier Techniques (Semlam)
General Electric C Syracuse N Y
Corp. Source Codes: 888888888
Report No.: RADC-TDR64 148
May 64 2p
Journal Announcement: USGRDR6501
Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.
NTIS Prices: PC A02
This report contains information concerning the work of the third quarter. Preliminary tests were started on the over-all amplifier system which includes an oxygen gas **laser** as an **oscillator** and GaAs **laser** diodes as an **amplifier** with the associated optical components and **cryogenic** dewar. The emphasis is to construct pulsed and CW GaAs laser diodes with SiO anti-reflection coatings. (Author)

35/3,AB/9 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

05999491
E.I. No: EIP02056846334
Title: Broadened gain bandwidth in diode-pumped Yb-doped materials at low temperature
Author: Kawanaka, Junji; Yasuhara, Akio; Yamakawa, Koichi; Nishioka, Hajime; Ueda, Ken-Ichi
Corporate Source: Advanced Photon Research Center Kansai Establishment Japan Atomic Energy Research Inst., Soraku-gun, Kyoto 619-0215, Japan
Conference Title: 4th Pacific Rim Conference on Lasers and Electro-Optics
Conference Location: Chiba, Japan Conference Date: 20010715-20010719
E.I. Conference No.: 58978
Source: Pacific Rim Conference on Lasers and Electro-Optics, CLEO - Technical Digest v 1 2001. p I84-I85 (IEEE cat n 01TH8557)
Publication Year: 2001
Language: English
Abstract: A diode-pumped laser **oscillator** using Yb:glass and Yb:YLF at low temperature was developed to verify broadening of an available gain bandwidth at low temperature. The materials were cooled by a helium cryostat and the tuning range of the **oscillator** was measured using a birefringent filter. Laser **oscillation** at long wavelength were not observed because of an insertion loss of cryostat cell. The output power was found to increase to more than twenty times of that at room temperature for both materials. (Edited abstract) 3 Refs.

35/3,AB/10 (Item 2 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

05730371
E.I. No: EIP00125436866
Title: Improved saturation fluence for petawatt CPA system in low

temperature Yb-doped materials
Author: Kawanaka, J.; Nishioka, H.; Ueda, K.
Corporate Source: Japan Atomic Energy Res. Inst (APR/JAERI), Kyoto, Jpn
Conference Title: Conference on Lasers and Electro-Optics (CLEO 2000)
Conference Location: San Francisco, CA, USA Conference Date: 20000507-20000512
E.I. Conference No.: 57598
Source: Pacific Rim Conference on Lasers and Electro-Optics, CLEO - Technical Digest 2000. p 250-251
Publication Year: 2000
CODEN: 002223
Language: English
Abstract: A LD-pumped **oscillator** performance with a Yb:YLF is demonstrated for the first time. Effective saturation fluence at laser wavelength is shown to be much higher than a bulk damage threshold for a chirped pulse. The reduction of saturation fluence is an inevitable difficulty in realizing a compact LD-pumped table-top CPA system. 3 Refs.

35/3,AB/11 (Item 3 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

03657489
E.I. No: EIP93061014139
Title: Compact resonator design for high power slab lasers
Author: Lue, Qitao; Dong, Shalei; Weber, Horst
Corporate Source: Technische Universitaet Berlin, Berlin, Ger
Source: Optics Communications v 99 n 3-4 Jun 1 1993. p 201-206
Publication Year: 1993
CODEN: OPCOB8 ISSN: 0030-4018
Language: English
Abstract: A compact **oscillator**-amplifier resonator, designed especially for high-power slab-geometry lasers, was investigated both theoretically and experimentally. A beam parameter product of less than 7 mm mrad (20 times the diffraction-limited beam quality) in both slab directions at an average output power of 530 W was achieved with a Nd:YAG slab laser. (Author abstract) 26 Refs.

35/3,AB/12 (Item 1 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

11090736 Genuine Article#: 606UF Number of References: 282
Title: Temperature effect on entrainment, phase shifting, and amplitude of circadian clocks and its molecular bases (ABSTRACT AVAILABLE)
Author(s): Rensing L (REPRINT) ; Ruoff P
Corporate Source: Univ Bremen,Inst Cell Biol Biochem & Biotechnol,POB 3304 40/D-28334 Bremen//Germany/ (REPRINT); Univ Bremen,Inst Cell Biol Biochem & Biotechnol,D-28334 Bremen//Germany/; Univ Coll Stavanger,N-4068 Stavanger//Norway/
Journal: CHRONOBIOLOGY INTERNATIONAL, 2002, V19, N5, P807-864
ISSN: 0742-0528 Publication date: 20020000
Publisher: MARCEL DEKKER INC, 270 MADISON AVE, NEW YORK, NY 10016 USA
Language: English Document Type: REVIEW
Abstract: Effects of temperature and temperature changes on circadian clocks in cyanobacteria, unicellular algae, and plants, as well as fungi, arthropods. and vertebrates are reviewed. Periodic temperature with periods around 24 h even in the low range of 1-2degreesC (strong Zeitgeber effect) can entrain all ectothermic (poikilothermic)

organisms. This is also reflected by the phase shifts-recorded by phase response curves (PRCs)-that are elicited by step- or pulsewise changes in the temperature. The amount of phase shift (weak or strong type of PRC) depends on the amplitude of the temperature change and on its duration when applied as a pulse. Form and position of the PRC to temperature pulses are similar to those of the PRC to **light** pulses. A combined high/**low temperature** and **light** /dark cycle leads to a stabile phase and maximal **amplitude** of the circadian rhythm-when applied in phase (i.e., warm/light and cold/dark). When the two Zeitgeber cycles are phase-shifted against each other the phase of the circadian rhythm is determined by either Zeitgeber or by both, depending on the relative strength (amplitude) of both Zeitgeber signals and the sensitivity of the species/individual toward them. A phase jump of the circadian rhythm has been observed in several organisms at a certain phase relationship of the two Zeitgeber cycles.

Ectothermic organisms show inter- and intraspecies plus seasonal variations in the temperature limits for the expression of the clock. either of the basic molecular mechanism, and/or the dependent variables. A step-down from higher temperatures or a step-up from lower temperatures to moderate temperatures often results in initiation of **oscillations** from phase positions that are about 180degrees different. This may be explained by holding the clock at different phase positions (maximum or minimum of a clock component) or by significantly different levels of clock components Lit the higher or lower temperatures. Different permissive temperatures result in different circadian amplitudes, that usually show a species-specific optimum.

In endothermic (homeothermic) organisms periodic temperature changes of about 24h often cause entrainment, although with considerable individual differences, only if they are of rather high amplitudes (weak Zeitgeber effects). The same applies to the phase-shifting effects of temperature pulses. Isolated bird pineals and rat suprachiasmatic nuclei tissues on the other hand. respond to medium high temperature pulses and reveal PRCs similar to that of light signals. Therefore, one may speculate that the self-selected circadian rhythm of body temperature in reptiles or the endogenously controlled body temperature in homeotherms (some of which show temperature differences of more than 2degreesC) may, in itself, serve as an internal entraining system, The so-called heterothermic mammals (undergoing low body temperature states in a daily or seasonal pattern) may be more sensitive to temperature changes.

Effects of temperature elevation on the molecular clock mechanisms have been shown in Neurospora (induction of the frequency (FRQ) protein) and in Drosophila (degradation of the period (PER) and timeless (TIM) protein) and can explain observed phase shifts of rhythm,, in conidiation and locomotor activity, respectively.

Temperature changes probably act directly on all processes of the clock mechanism some being more sensitive than the others. Temperature changes affect membrane properties, ion homeostasis, calcium influx. and other signal cascades (cAMP, cGMP, and the protein kinases A and C) (indirect effects) and may thus influence, in particular, protein phosphorylation processes of the clock mechanism. The temperature effects resemble to sonic degree those induced by light or by light-transducing neurons and their transmitters. In ectothermic vertebrates temperature changes significantly affect the melatonin rhythm, which in turn exerts entraining (phase shifting) functions.

35/3,AB/13 (Item 2 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

03591237 Genuine Article#: PP398 Number of References: 32
Title: RHYTHMIC SECRETION OF MELATONIN BY THE SUPERFUSED PIKE PINEAL ORGAN - THERMOPERIOD AND PHOTOPERIOD INTERACTION (Abstract Available)
Author(s): FALCON J; BOLLIET V; RAVAULT JP; CHESNEAU D; ALI MA; COLLIN JP
Corporate Source: UNIV POITIERS,NEUROBIOL & NEUROENDOCRINOL CELLULAIRES LAB,CNRS,URA 290,40 AVE RECTEUR PINEAU/F-86022 POITIERS//FRANCE/; UNIV POITIERS,NEUROBIOL & NEUROENDOCRINOL CELLULAIRES LAB,CNRS,URA 1869/F-86022 POITIERS//FRANCE/; UNIV MONTREAL,DEPT BIOL/MONTREAL/PQ/CANADA/; UNIV TOURS,NEUROENDOCRINOL LAB/TOURS//FRANCE/ ; INRA,PHYSIOL REPROD STN/NOUZILLY//FRANCE/
Journal: NEUROENDOCRINOLOGY, 1994, V60, N5 (NOV), P535-543
ISSN: 0028-3835
Language: ENGLISH Document Type: ARTICLE
Abstract: In the pineal organ of the pike (Esox lucius, teleost), the rhythmic production of melatonin by the photoreceptor cells is governed by a population of endogenous circadian **oscillators**, synchronized and entrained by the light/dark (L/D) cycle. Production of melatonin is inhibited by light and highly increased in the dark. In the present study, isolated and superfused pike pineals were exposed to a 24-hour temperature cycle of high (10 degrees C) or low (4 degrees C) amplitude, either under L/D, or under constant darkness. Under L/D, photoperiod is the dominant entraining stimulus for the melatonin secretion rhythm. It was high during the dark phase and low during the light phase, either under cold light/warm dark or under warm light/cold dark conditions. Under a warm light/cold dark cycle, the amplitude of the melatonin rhythm was reduced. In pineals cultured at 10 degrees C, a 20 degrees C temperature pulse potentiated or reduced the night-induced rise in melatonin production when applied, during the dark or during the preceding **light** phase, respectively. Under constant darkness, high- or **low-amplitude temperature** cycles could synchronize the rhythmic production of melatonin, which peaked with the high temperature. However, the shape of the **oscillation** could appear modified under warm subjective-L/cold subjective-D, depending on the experimental conditions. Finally, the rhythmic release of melatonin synchronized by a temperature cycle under constant darkness was no longer observed after removal of the external zeitgeber. The present study provides direct evidence that the pineal acts as a photothermotransducer. Photo- and thermoperiod interact on the pineal to determine the amplitude, phase, and duration of the melatonin **oscillations**. Thermoperiod is not as powerful as photoperiod in entraining the circadian clocks which drive the melatonin-producing rhythm. We provide strong support for the hypothesis that melatonin might be involved in mediating the effects of the fish pineal organ on thermodependent physiological and behavioral processes.

39/3,AB/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

00613699 INSPEC Abstract Number: B74010556
Title: Reluctance-based **regenerative** low-frequency **amplifiers** as components of light sensors
Author(s): Stukan, V.A.; Trifonov, V.I.
Journal: Radiotekhnika i Elektronika vol.17, no.12 p.2568-74
Publication Date: Dec. 1972 Country of Publication: USSR
CODEN: RAELA4 ISSN: 0033-8494
Translated in: Radio Engineering and Electronic Physics vol.17, no.12 p.2058-63
Publication Date: Dec. 1973 Country of Publication: USA
CODEN: RENPAL ISSN: 0033-7889
Language: English
Abstract: Reluctance-based **regenerative amplifiers** operating at **low temperatures** as components of light sensors are analyzed. It is shown that when the resistance of the photosensor is much smaller than the reluctance of the magnetoresistive specimen, the noise figure of the amplifier approaches one. The requirements on the superconducting solenoid used in such amplifiers are discussed.
Subfile: B

39/3,AB/2 (Item 1 from file: 6)
DIALOG(R)File 6:NTIS

0304270 NTIS Accession Number: AD-735 755/XAB
Common-Base vs. Common-Emitter Performance and Reliability for VHF Stages (Final rept. 25 Feb 70-24 Mar 71)
Chang, Z. F.
RCA Solid State Div Somerville N J
Corp. Source Codes: 405931
Report No.: ECOM-0145-F
Jan 72 63p
Journal Announcement: GRAI7205
Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.
NTIS Prices: PC A04/MF A01
Two broadband amplifier chains were developed for operation with a minimum output power of 10watts over the 225- to 400-megahertz band. Four stages were used in each chain, with each stage having 50-ohm input and output terminals. The stages in one amplifier chain operated in the common-base configuration; the other chain used common-emitter stages. Comparison of the rf performance of the two amplifier chains showed that common-base amplifiers provided a flatter output response, a higher power gain, and a lower input VSWR than common-emitter amplifiers. Infrared scanning performed on the output stages indicated that the common-base amplifier also had a **lower** junction spot **temperature**. In high-power common-base operation, extremely low base-lead inductance was necessary to prevent the **amplifier** from becoming **regenerative**. (Author)

39/3,AB/3 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

05731146
E.I. No: EIP00125437638
Title: Time-resolved nonlinear optical spectroscopy of a strongly correlated insulator
Author: Schumacher, A.B.
Corporate Source: E.O. Lawrence Berkeley Lab, Berkeley, CA, USA
Conference Title: Quantum Electronics and Laser Science Conference (QELS 2000)
Conference Location: San Francisco, CA, USA Conference Date: 20000507-20000512
E.I. Conference No.: 57599
Source: Conference on Quantum Electronics and Laser Science (QELS) - Technical Digest Series 2000. p 148-149
Publication Year: 2000
CODEN: 002097
Language: English
Abstract: Linear and nonlinear, time-resolved optical spectroscopy of the charge-transfer exciton on optically thin Sr//2CuO//2Cl//2 single crystals over a wide range of excitation energies and temperatures were carried out. An anomalously large temperature dependence of the charge-transfer (CT) exciton in this material and exciton dynamics was observed. Under photoexcitation at **low temperatures**, an increase in spectral weight within the energy range of the probe was observed. 6 Refs.

39/3,AB/4 (Item 2 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

05066284
E.I. No: EIP98074297793
Title: Design and implementation of a TW-class high-average power laser system
Author: Durfee, C.G., III; Backus, S.; Murnane, M.M.; Kapteyn, H.C.
Corporate Source: Univ of Michigan, Ann Arbor, MI, USA
Source: IEEE Journal on Selected Topics in Quantum Electronics v 4 n 2 Mar-Apr 1998. p 395-406
Publication Year: 1998
CODEN: IJSQEN ISSN: 1077-260X
Language: English
Abstract: We describe the design, modeling and characterization of a titanium-doped sapphire **multipass**, kilohertz **amplifier** system with output pulses of energy 4.4 mJ and duration 17 fs, giving a peak power of 0.26 TW. The thermal lensing in the second amplifier stage is virtually eliminated by **cryogenic** cooling of the laser crystal. Gain-narrowing and shifting of the amplified spectrum are reduced by tailoring the output spectrum of the oscillator and by using a low-loss **multipass amplifier** chain. Fourth-order spectral dispersion was completely eliminated by using a prism pair in addition to adjusting the stretcher and compressor grating separation and angle. We also numerically modeled the evolution of the pulse energy and spectral phase and amplitude through the amplifier system. The results of the model are in excellent agreement with measurements made using the technique of transient-grating frequency-resolved optical gating. (Author abstract) 57 Refs.

39/3,AB/5 (Item 3 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

04363157
E.I. No: EIP96033108373
Title: Femtosecond laser excitation dynamics of the semiconductor-metal phase transition in VO//2
Author: Becker, Michael F.; Buckman, A. Bruce; Walser, Rodger M.; Lepine, Thierry; Georges, Patrick; Brun, Alain
Corporate Source: Univ of Texas at Austin, Austin, TX, USA
Source: Journal of Applied Physics v 79 n 5 Mar 1 1996. p 2404-2408
Publication Year: 1996
CODEN: JAPIAU ISSN: 0021-8979
Language: English
Abstract: The subpicosecond characteristics of the optical parameters of VO//2 thin films are studied for laser excitation by the first-order phase transition. The VO//2 specimens are fabricated by a novel **low-temperature** process compatible with polymer substrates, which involves sputtering vanadium in an oxygen-hydrogen-argon plasma at temperature less than 250 degree C, followed by annealing in a static nitrogen atmosphere at temperature greater than equivalent to 290 degree C. The films are characterized by transmission electron microscopy and x-ray analyses. The optical setup used for pump-probe evaluations is conventional. The laser source is a cw passively mode-locked Ti:sapphire laser at 780nm wavelength with a **regenerative amplifier** operating at 20Hz and a grating pulse compressor. 20 Refs.

39/3,AB/6 (Item 1 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

09019865 Genuine Article#: 357JN Number of References: 13
Title: Microstructuring with femtosecond lasers (ABSTRACT AVAILABLE)
Author(s): Nolte S (REPRINT) ; Kamlage G; Korte F; Bauer T; Wagner T; Ostendorf A; Fallnich C; Welling H
Corporate Source: LASER ZENTRUM HANNOVER EV,HOLLERITHALLEE 8/D-30419 HANNOVER//GERMANY/ (REPRINT)
Journal: ADVANCED ENGINEERING MATERIALS, 2000, V2, N1-2 (FEB), P23-27
ISSN: 1438-1656 Publication date: 20000200
Publisher: WILEY-V C H VERLAG GMBH, MUHLENSTRASSE 33-34, D-13187 BERLIN, GERMANY
Language: English Document Type: ARTICLE
Abstract: Using ultrashort laser pulses can cause the ablation of nearly all kinds of materials, leading to very precise machining results with minimal damage. This includes even the machining of delicate materials with high heat conductivities or comparatively **low** melting **temperatures**, such as metals, as well Its optical transparent and organic materials. The best results are obtained using pulses with sub-picosecond duration. This report summarizes recent progress in ultrashort pulse laser machining. Several promising applications in microstructuring, nanotechnology and medicine are highlighted.

39/3,AB/7 (Item 2 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

06347356 Genuine Article#: YL344 Number of References: 20
Title: High-power terahertz radiation from a high-repetition-rate large-aperture photoconducting antenna (ABSTRACT AVAILABLE)
Author(s): Mouret G (REPRINT) ; Chen W; Boucher D; Bocquet R; Mounaix P; Theron D; Lippens D

Corporate Source: UNIV LITTORAL,PHYSICOCHIM ATMOSPHERE LAB/F-59140 DUNKERQUE//FRANCE/ (REPRINT)
Journal: MICROWAVE AND OPTICAL TECHNOLOGY LETTERS, 1998, V17, N1 (JAN), P 23-27
ISSN: 0895-2477 Publication date: 19980100
Publisher: JOHN WILEY & SONS INC, 605 THIRD AVE, NEW YORK, NY 10158-0012
Language: English Document Type: ARTICLE
Abstract: While the majority of research with terahertz radiation from large-aperture antennas used high-intensity femtosecond laser pulses with low repetition rates, we used a **regenerative amplifier** with a repetition rate up to 300 kHz. This high repetition rate allows us to combine a high-power large-aperture transmitter and dipole antenna detection. (C) 1998 John Wiley & Sons, Inc.

39/3,AB/8 (Item 3 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

06305278 Genuine Article#: YH207 Number of References: 49
Title: Femtosecond time-resolved spectroscopy of the primary photochemistry of phytochrome (ABSTRACT AVAILABLE)
Author(s): Andel F; Hasson KC; Gai F; Anfinrud PA (REPRINT) ; Mathies RA
Corporate Source: HARVARD UNIV,DEPT CHEM & BIOL CHEM/CAMBRIDGE//MA/02138 (REPRINT); HARVARD UNIV,DEPT CHEM & BIOL CHEM/CAMBRIDGE//MA/02138; UNIV CALIF BERKELEY,DEPT CHEM/BERKELEY//CA/94720
Journal: BIOSPECTROSCOPY, 1997, V3, N6, P421-433
ISSN: 1075-4261 Publication date: 19970000
Publisher: JOHN WILEY & SONS LTD, BAFFINS LANE CHICHESTER, W SUSSEX, ENGLAND PO19 1UD
Language: English Document Type: ARTICLE
Abstract: Time-resolved absorption spectra of P-r phytochrome were obtained using a **regeneratively amplified** femtosecond titanium : sapphire laser system. The early time transient absorption spectra are comprised of prompt P-r photobleaching, stimulated emission, and excited-state absorption features that decay with a 24 ps time constant that matches the ground state appearance time of the primary photoproduct. Based on the 5 ns radiative lifetime calculated from the absorption and spontaneous emission spectra and the fluorescence quantum yield of 5.5 (+/- 0.5) X 10(-3), we calculate an excited-state lifetime of 28 ps that agrees well with the directly determined lifetime. The transient absorption spectra are consistent with a primary photochemical reaction quantum yield of 0.15, and the absorption spectrum of the primary photoproduct closely resembles that of the **low-temperature** trapped intermediate, lumi-R. We conclude that the primary photoisomerization, which is believed to be a Z,syn --> E,syn isomerization of the C-15=C-16 chromophore bond, occurs in 24 ps. (C) 1997 John Wiley & Sons, Inc.

39/3,AB/9 (Item 4 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

06005881 Genuine Article#: XN677 Number of References: 13
Title: Free-space electro-optic sampling with a high-repetition-rate **regenerative amplified** laser (ABSTRACT AVAILABLE)
Author(s): Lu ZG (REPRINT) ; Campbell P; Zhang XC
Corporate Source: RENSSELAER POLYTECH INST,DEPT PHYS/NEW YORK//NY/12180 (REPRINT)
Journal: APPLIED PHYSICS LETTERS, 1997, V71, N5 (AUG 4), P593-595

ISSN: 0003-6951 Publication date: 19970804
Publisher: AMER INST PHYSICS, CIRCULATION FULFILLMENT DIV, 500 SUNNYSIDE BLVD, WOODBURY, NY 11797-2999
Language: English Document Type: ARTICLE
Abstract: The use of a high-repetition-rate (250 kHz) **regenerative amplified** laser with mu J pulse energy in a free-space THz beam electro-optic sampling system has produced a significant improvement in both the signal-to-noise ratio (>10(5)) and absolute probe beam photomodulation depth (>19%). Focal plane images of the electric field distribution (strength and polarity) in dipole and quadrupole planar photoconductive emitters are presented. Preliminary results of real-time 2D THz images of moving objects have also been obtained. (C) 1997 American Institute of Physics.

39/3,AB/10 (Item 5 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

03682019 Genuine Article#: PY106 Number of References: 25
Title: CHARGE COMPENSATION AND THE LUMINESCENCE OF CR3+ IN KMGF3 (Abstract Available)
Author(s): LEE DR; HAN TPJ; HENDERSON B
Corporate Source: UNIV STRATHYCLYDE,DEPT PHYS & APPL PHYS,OPT MATRES CTR/GLASGOW G1 1XN//SCOTLAND/
Journal: APPLIED PHYSICS A-SOLIDS AND SURFACES, 1994, V59, N4 (OCT), P 365-372
ISSN: 0721-7250
Language: ENGLISH Document Type: ARTICLE
Abstract: Studies of the photoluminescence spectra of Cr3+ ions in KMgF3 crystals co-doped with Cr3+ and Ni2+ ions are reported. Several crystal field sites are identified by the different R-line spectra due to the 2E --> 4A2 transition and broadband luminescences associated with the 4T2-->4A2 transitions. Cr3+ ions substituting without local charge compensation on the octahedral Mg2+ site give rise to a **low temperature** R line in photoluminescence at lambda = 702.3 nm with a radiative decaytime of 3 ms at T = 14 K. At T = 300 K this isotropic centre gives rise to an unpolarized broadband 4T2-->4A2 emission, which results from the thermal occupancy of an excited 4T2 state just above the 2E level which, at **lower temperature,** gives rise to emission in the R-line. Other crystal field sites are due to some Cr3+ ions having Mg2+ or K+ vacancies in nearest-neighbour positions, these vacancies being required to maintain charge neutrality in doped fluoride perovskites. The Cr3+ -K+ vacancy complex results in the centre having trigonal symmetry, and **low temperature,** photoluminescence via R1 and R2 lines at 716.8 nm and 716.0 nm, respectively. Finally, Cr3+ ions having a nearest neighbour Mg2+ vacancy have tetragonal symmetry, experiencing weak crystal fields. In consequence, the 4T2 level lies below 2E and the photoluminescence spectrum at **low temperature** takes the form of a polarized broad 4T2-->4A2 band with peak at 760 nm and radiative decaytime of 54 mus.

39/3,AB/11 (Item 6 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

03284751 Genuine Article#: NF373 Number of References: 703
Title: ULTRASHORT-PULSE GENERATION AND AMPLIFICATION - APPLICATIONS IN ANALYTICAL-CHEMISTRY

Author(s): WEAVER WL; GUSTAFSON TL
Corporate Source: SYST RES LABS INC,DIV RES APPLICAT,2800 INDIAN RIPPLE RD/DAYTON//OH/45440; SYST RES LABS INC,DIV RES APPLICAT,2800 INDIAN RIPPLE RD/DAYTON//OH/45440; OHIO STATE UNIV,DEPT CHEM/COLUMBUS//OH/43210
Journal: SPECTROCHIMICA ACTA REVIEWS, 1993, V15, N6, P527-579
ISSN: 0958-319X
Language: ENGLISH Document Type: REVIEW

39/3,AB/12 (Item 1 from file: 35)

01632765 AAD9825349
HIGH-REPETITION-RATE FEMTOSECOND AMPLIFIERS AND APPLICATIONS TO SEMICONDUCTOR DYNAMICS (TITANIUM:SAPPHIRE LASERS, QUANTUM DOTS)
Author: SOSNOWSKI, THOMAS S.
Degree: PH.D.
Year: 1988
Corporate Source/Institution: THE UNIVERSITY OF MICHIGAN (0127)
Source: VOLUME 59/02-B OF DISSERTATION ABSTRACTS INTERNATIONAL. PAGE 713. 143 PAGES

This dissertation describes the development of a high-repetition-rate broadly-tunable ultrafast laser system, and experiments that employ this system to examine carrier dynamics in **low-temperature**-grown GaAs and in InGaAs quantum dots. The first part of the dissertation describes: the development of a chirped-pulse amplification system for a 250-kHz Ti:sapphire **regenerative amplifier**, a pulse characterization technique (STRUT) that allows complete analysis of femtosecond pulses in real-time, an alignment-insensitive technique for generating tunable amounts of third-order dispersion in a CPA system, and the design of a femtosecond optical parametric amplifier. The second part of this dissertation investigates carrier dynamics in two semiconductor systems via experiments that utilize the unique properties of this laser system. High-carrier-density two-color pump-probe measurements characterized the free-electron dynamics in **low-temperature** -grown GaAs and for the first time allowed determination of the trapped-electron lifetimes. Very-low-carrier-density broad-band-probe measurements determined the carrier relaxation rates in InGaAs quantum dots and indicated the electron relaxation was very rapid in spite of a theoretical predicted phonon bottleneck.

39/3,AB/13 (Item 2 from file: 35)

01541470 AAD9714085
ULTRAFAST SPECTROSCOPY: I. COMBUSTION AND MOLECULAR DYNAMICS. II. DEVELOPMENT OF TUNABLE MID-INFRARED LASER SYSTEM TO STUDY VIBRATIONAL DYNAMICS (FLAMES, PENTACENE)
Author: BREWER, TIMOTHY ROBERT
Degree: PH.D.
Year: 1997
Corporate Source/Institution: STANFORD UNIVERSITY (0212)
Source: VOLUME 57/11-B OF DISSERTATION ABSTRACTS INTERNATIONAL. PAGE 6949. 147 PAGES

Ultrafast laser spectroscopy is a useful tool to investigate molecular

dynamics of various chemical systems. Measurements of the dynamics in flames, **low-temperature** solids, and room temperature liquids will be discussed in this dissertation.

Polarization-selective picosecond transient grating experiments were performed on several sodium-seeded premixed flames at various fringe spacings. Intensity gratings (excitation beams are of the same polarization) were used to determine the excited-state quenching collision rates and the temperature of the flame. Polarization gratings (excitation beams are orthogonally polarized) were used to measure the Na diffusion constants and the rates of scattering between ground state magnetic sublevels. These experiments demonstrate the potential to probe non-invasively the dynamics of combustible systems.

Experiments were performed to study the effects of irradiation effects on a mixed organic crystalline system. The previous characterized system of pentacene doped in p-terphenyl was used. These crystals were irradiated with both Co-60 and neutron irradiation sources. By irradiating the crystals, we hoped to create highly defected crystals. Absorption spectra (which measures the environment of a chromophore) and photon echo (which measures excited state lifetime and dephasing time) measurements at 1.8 K showed no difference between the non-irradiated and irradiated crystals. A possible interpretation is that the amount of defects created was not large enough to be detected by these methods.

A tunable femtosecond mid-infrared laser was developed to study vibrational dynamics. The Ti:sapphire based system utilizes a **regenerative amplifer** system pumped by a high-power doubled Nd:YAG laser. The output from the amplifier is used to pump three nonlinear process (white light continuum generation and optical parametric amplifiers) to generate two tunable near-infrared laser pulses. These two frequencies were then mixed in lithium iodate to generate 500 nanojoules of tunable (from 3.5 to 5.2 micron) mid-infrared pulses. Pump-probe experiments were performed on tungsten hexacarbonyl in chloroform and metalloporphyrin compounds in chlorinated solvents. Pump-probe investigations measure the vibrational relaxational lifetime as well as the oreintational relaxation. These experiments exhibit the ability of ultrafast mid-infrared laser to study vibrational dynamics.

39/3,AB/14 (Item 3 from file: 35)
DIALOG(R)File 35:Dissertation Abs Online

01195215 AAD9135842
STUDIES OF METASTABLE CARBON MONOXIDE BINDING IN MYOGLOBIN (CARBON MONOXIDE)
Author: ROBERSON, MARK WINDSOR
Degree: PH.D.
Year: 1991
Corporate Source/Institution: PRINCETON UNIVERSITY (0181)
Source: VOLUME 52/07-B OF DISSERTATION ABSTRACTS INTERNATIONAL. PAGE 3677. 136 PAGES

In this thesis, I study the problem of metastable states in carbonmonoxymyoglobin by using picosecond transient vibrational spectroscopy with a visible pump and an infrared probe. I describe a high repetition rate **regeneratively** pumped **amplifier** system that we designed, built and used to generate the visible pump and infrared probe pulses. I examine the photodissociated CO ligand in the first few hundred picoseconds after it is photodissociated from the heme site. I show that a metastable site for the CO appears in less than 100 ps after dissociation at all the temperatures 150 $<$ T $<$ 300 K, and that the state lasts for 60 $\pm$ 20 ns at 300 K. I measure the lineshape and absorption

polarization ratio of this state at several temperatures. Concurrent with the change in temperature is a change in spectral structure, polarization ratio, oscillator strength intensity of the induced absorption and a change in geminate recombination to the heme site. I identify the change in these characteristics with the liquid to glass transition of the glycerol-water-myoglobin solution, whose glass transition is 186 K, as measured by scanning differential calorimetry. I also present the results of computer modeling calculations on the X-ray structure of carbonmonoxymyoglobin, where I show that our data are well explained by the hypothesis that the room temperature metastable state is in a different location than the **low temperature** metastable state. I find two metastable sites for the photodissociated carbon monoxide. It has been speculated previously that one of these locations is the metastable binding site occupied by carbon monoxide after photodissociation. I show that its orientation is consistent with our **low temperature** polarization ratio measurements but not with our room temperature experiments. I identify another site as the likely room temperature binding site, and investigate the potential barriers involved in entering and exiting this configuration. I use this information to propose a trajectory by which ligands enter and leave myoglobin at physiological temperatures and consider the resulting picture in light of previous work.

39/3,AB/15 (Item 1 from file: 65)
DIALOG(R)File 65:Inside Conferences

04416022 INSIDE CONFERENCE ITEM ID: CN046227839
Diode-Pumped Q-Switched Yb:LiYF SUB 4 Laser at **Low Temperature** for Chirped Pulse **Regenerative Amplification**
Kawanaka, J.; Yamakawa, K.; Nishioka, H.; Ueda, K.-i.
CONFERENCE: Topical meeting on advanced solid-state lasers
TRENDS IN OPTICS AND PHOTONICS, 2002; VOL 68 P: 397-400
Optical Society of America, 2002
ISSN: 1094-5695 ISBN: 1557526974
LANGUAGE: English DOCUMENT TYPE: Conference Papers
CONFERENCE EDITOR(S): Fermann, M. E.; Marshall, L. R.
CONFERENCE SPONSOR: Optical Society of America
CONFERENCE LOCATION: Quebec City, Canada 2002; Feb (200202) (200202)

39/3,AB/16 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus

04911549 JICST ACCESSION NUMBER: 01A0652779 FILE SEGMENT: JICST-E
Pumping condition of efficient, end-pumped Yb:YAG rod amplifiers.
SUGIURA YASUSHI (1); KAWATO SAKAE (1); KOBAYASHI TAKAO (1)
(1) Fukui Univ., Fac. of Eng.
Denshi Joho Tsushin Gakkai Gijutsu Kenkyu Hokoku(IEIC Technical Report (Institute of Electronics, Information and Communication Enginners), 2001, VOL.101,NO.65(LQE2001 1-15), PAGE.49-54, FIG.11, REF.12
JOURNAL NUMBER: S0532BBG
UNIVERSAL DECIMAL CLASSIFICATION: 621.375.826:54-16
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication
ABSTRACT: High-power pulsed-lasers are useful as light sources for high-precision spectroscopic sensing, non-linear optics and laser processing applications. A compact, high-gain and efficient, rod-type

Yb:YAG laser amplifier is designed for MOPA(Master Oscillator and Power Amplifier) systems. The laser rod and pumping parameters of the quasi-three-level Yb:YAG crystal are optimized for high-gain and efficient amplifiers. The maximum optical effiiency is estimated to be 60% with **low temperature** increase of the laser rod. (author abst.)

39/3,AB/17 (Item 2 from file: 94)
DIALOG(R)File 94:JICST-EPlus

03515168 JICST ACCESSION NUMBER: 98A0175660 FILE SEGMENT: JICST-E
Progress Report of Leser-Fusion Related Experiments at Gifu University-1996.
SAKAGAMI Y (1); YOSHIDA H (1); SUZUKI Y (1); YASUFUKU K (1); YAMADORI S (1); KONISHI T (1); ITOU T (1); UTSUNOMIYA R (1); TAKAHASHI M (1)
(1) Gifu Univ.
Gifu Daigaku Kogakubu Kenkyu Hokoku(Research Report of the Faculty of Engineering, Gifu University), 1998, NO.48, PAGE.23-32, FIG.11, REF.33
JOURNAL NUMBER: F0496AAM ISSN NO: 0376-0332 CODEN: GDKHA
UNIVERSAL DECIMAL CLASSIFICATION: 621.375.826.06 621.039.6
LANGUAGE: English COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication
ABSTRACT: This report describes the activities and progress of the laser-fusion related experiments during the period April 1996 thought March 1997. In this report, the contents are divided in seven sections. The first section is to search the problem which arises in the large-sized HALNA target chamber. The second one is to make clear the mechanism of the optical forces by making more accurate measurements of them, by extending the experiment to the lower pressure range, and by ascertaining the effect of pellet radii on the optical forces. Thirdly description is given about development of pellet mass determination using the electrodynamic levitaion. In the forth, we propose a new technique to a thickness measurement on a Ni thin film. The fifth section is to compare theoretical computer simulation with experiment as fundamentals of **low temperature** coat over a Plastic Microballoon(PMB). In the sixth, we simulate the **multi-pass amplifier** system in the glass laser"HALNA". In the last, we evaluate temperature dependence of the threshold energy and the slope efficiency of a Ti: sapphire oscillator. (author abst.)

39/3,AB/18 (Item 1 from file: 103)
DIALOG(R)File 103:Energy SciTec

00457842 ERA-04-020037; EDB-79-031940
Title: Possible high energy laser at 1.27 ..mu..m
Author(s): Kerber, R.L.; MacKnight, A.K.; Franklin, R.D.
Affiliation: Michigan State University, East Lansing, Michigan 48824
Source: Appl. Opt. (United States) v 17:20. Coden: APOPA
Publication Date: 15 Oct 1978
p 3276-3283
Language: English
Abstract: Preliminary theoretical and experimental evidence is presented that suggests the potential of lasing from the strongly forbidden O/sub 2/(/sup 1/..delta../sub g/) ..-->..O/sub 2/(/sup 3/..sigma../sup -//sub g/) transition of molecular oxygen. A rate equation model is developed

which predicts pulse energies up to several hundred joules/liter atmosphere for typical mixtures of 10/sub 3/:2N/sub 2/ activated by uv photolysis in less than 10 ..mu..sec. Preliminary results from a flash photolysis laser apparatus demonstrating 1.27-..mu..m lasing are presented. Results from a computer analysis assessing the possibility of using this system as a **multipass amplifier** are also given.

39/3,AB/19 (Item 2 from file: 103)
DIALOG(R)File 103:Energy SciTec

00410859 EDB-78-110039
Title: **Regenerative** power **amplifier** operating on the blue-green line of the nitrogen ion laser
Author(s): Collins, C.B.; Carroll, J.M.; Taylor, K.N.; Lee, F.W.
Affiliation: Center for Quantum Electronics, The University of Texas at Dallas, Box 688, Richardson, Texas 75080
Source: Appl. Phys. Lett. (United States) v 33:7. Coden: APPLA
Publication Date: 1 Oct 1978
p 624-626
Language: English
Abstract: Operation of the nitrogen ion laser as an optical **regenerative amplifier** driven by a master oscillator allows the output to be effectively switched into the blue-green region of the spectrum. In this work an amplifier containing a dilute plasma of nitrogen ions was pumped by thermolecular charge transfer from He/sub 2//sup +/ produced by an intense e-beam propagating through several atmospheres pressure of gas mixture. The injection of relatively broadband output from a dye laser oscillator caused the output from the amplifier to switch entirely into the (0,2) vibrational component of the B..-->..X electronic transition of N/sup +//sub 2/ at 470.9 nm. An output linewidth of 0.007 nm was achieved together with the early saturation of the laser transition needed for the extraction of power from the amplifier at optimal efficiency.

42/3,AB/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

7219439 INSPEC Abstract Number: A2002-09-3580B-003
Title: Mode selective excitation mechanisms in molecules using shaped pulses
Author(s): Weinacht, T.C.; Bartels, R.; Bucksbaum, P.H.; Pearson, B.; Apteyn, H.K.; **Murnane, M.**
Author Affiliation: Joint Inst. for Lab. Astrophys., Colorado Univ., Boulder, CO, USA
Conference Title: Technical Digest. Summaries of papers presented at the Quantum Electronics and Laser Science Conference. Postconference Technical Digest (IEEE Cat. No.01CH37172) p.177
Publisher: Opt. Soc. America, Washington, DC, USA
Publication Date: 2001 Country of Publication: USA 283+26 postdeadline papers pp.
ISBN: 1 55752 663 X Material Identity Number: XX-2001-02286
Conference Title: Technical Digest. Summaries of papers presented at the Quantum Electronics and Laser Science Conference. Conference Edition
Conference Sponsor: APS/Div. Laser Sci.; IEEE Lasers & Electro-Opt. Soc.; OSA-Opt. Soc. America
Conference Date: 6-11 May 2001 Conference Location: Baltimore, MD, USA
Language: English
Abstract: Summary form only given. A major goal of coherent control is to enable mode-selective excitation of molecules. Pulse shaping combined with learning control loops has been demonstrated to be a highly effective technique for coherent control. For many experiments however, the mechanism behind the control is not well understood. Moreover, previous work on controlling molecular vibration has largely been limited to molecular beams or **cryogenically** cooled systems. Here we present results on controlling nuclear vibrations in atmospheric density, room temperature (~300K), molecular gases. By using very broad-bandwidth pulses, we can impulsively excite selected vibrations, and also shape the light pulse to suppress or enhance specific modes in SF/sub 6/ and CO/sub 2/. This work extends the reach of previous experiments to macroscopic quantities of gas at room temperatures. In addition, accurate characterization of optimized pulses provided by FROG allows us to interpret the control mechanism.
Subfile: A

42/3,AB/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC

5960999 INSPEC Abstract Number: A9816-4260B-005, B9808-4320G-040
Title: Design and implementation of a TW-class high-average power laser system
Author(s): Durfee, C.G., III.; **Backus, S.; Murnane, M.M.; Kapteyn, H.C.**
Author Affiliation: Center for Ultrafast Opt. Sci., Michigan Univ., Ann Arbor, MI, USA
Journal: IEEE Journal of Selected Topics in Quantum Electronics vol.4, no.2 p.395-406
Publisher: IEEE,
Publication Date: March-April 1998 Country of Publication: USA
CODEN: IJSQEN ISSN: 1077-260X
SICI: 1077-260X(199803/04)4:2L.395:DICH;1-S
Material Identity Number: C465-98005

U.S. Copyright Clearance Center Code: 1077-260X/98/$10.00
Language: English

Abstract: We describe the design, modeling and characterization of a titanium-doped sapphire multipass, kilohertz amplifier system with output pulses of energy 4.4 mJ and duration 17 fs, giving a peak power of 0.26 TW. The thermal lensing in the second amplifier stage is virtually eliminated by **cryogenic** cooling of the laser crystal. Gain-narrowing and shifting of the amplified spectrum are reduced by tailoring the output spectrum of the oscillator and by using a low-loss multipass amplifier chain. Fourth-order spectral dispersion was completely eliminated by using a prism pair in addition to adjusting the stretcher and compressor grating separation and angle. We also numerically modeled the evolution of the pulse energy and spectral phase and amplitude through the amplifier system. The results of the model are in excellent agreement with measurements made using the technique of transie